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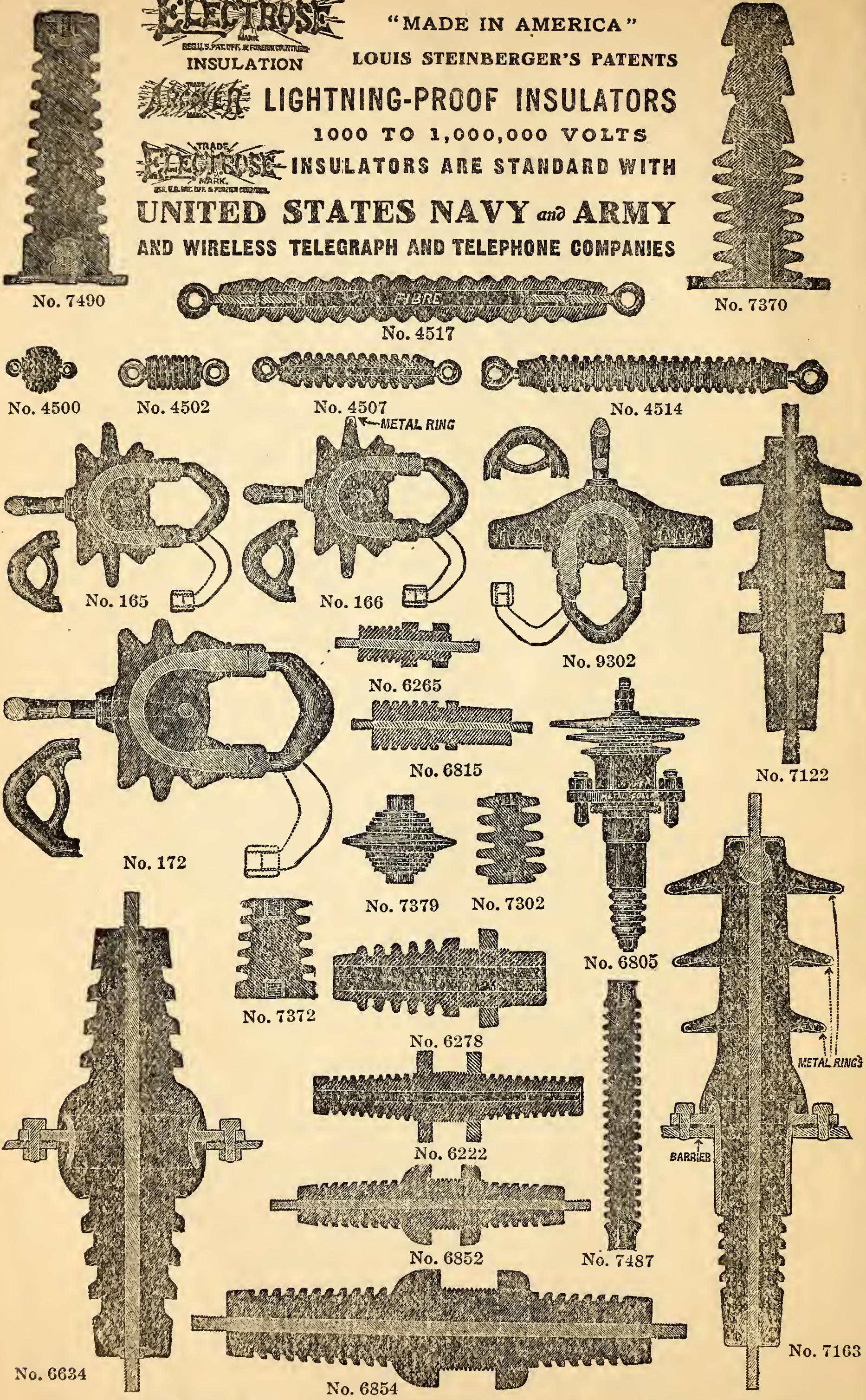

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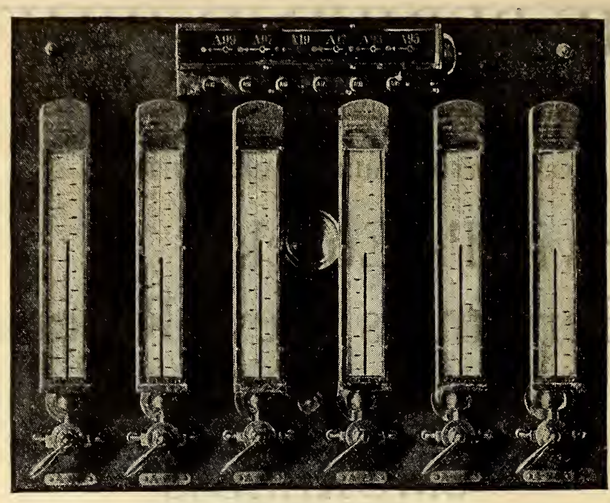

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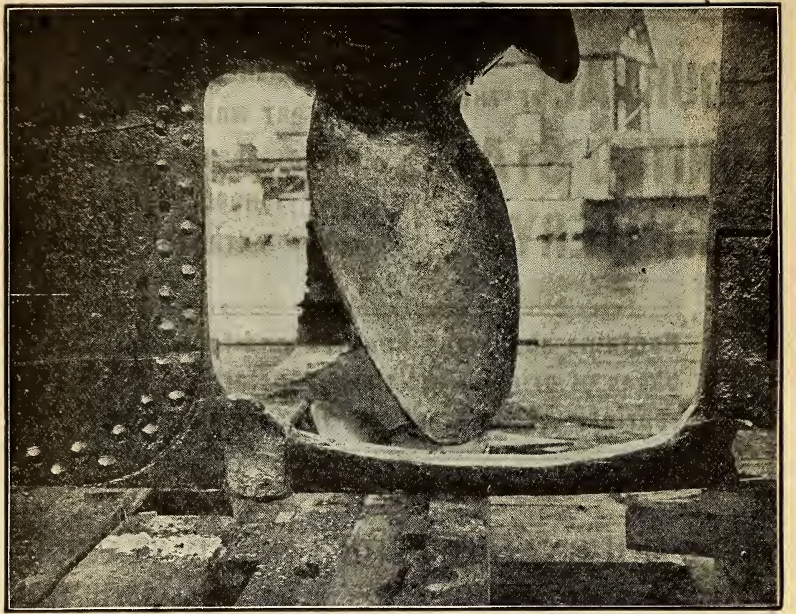

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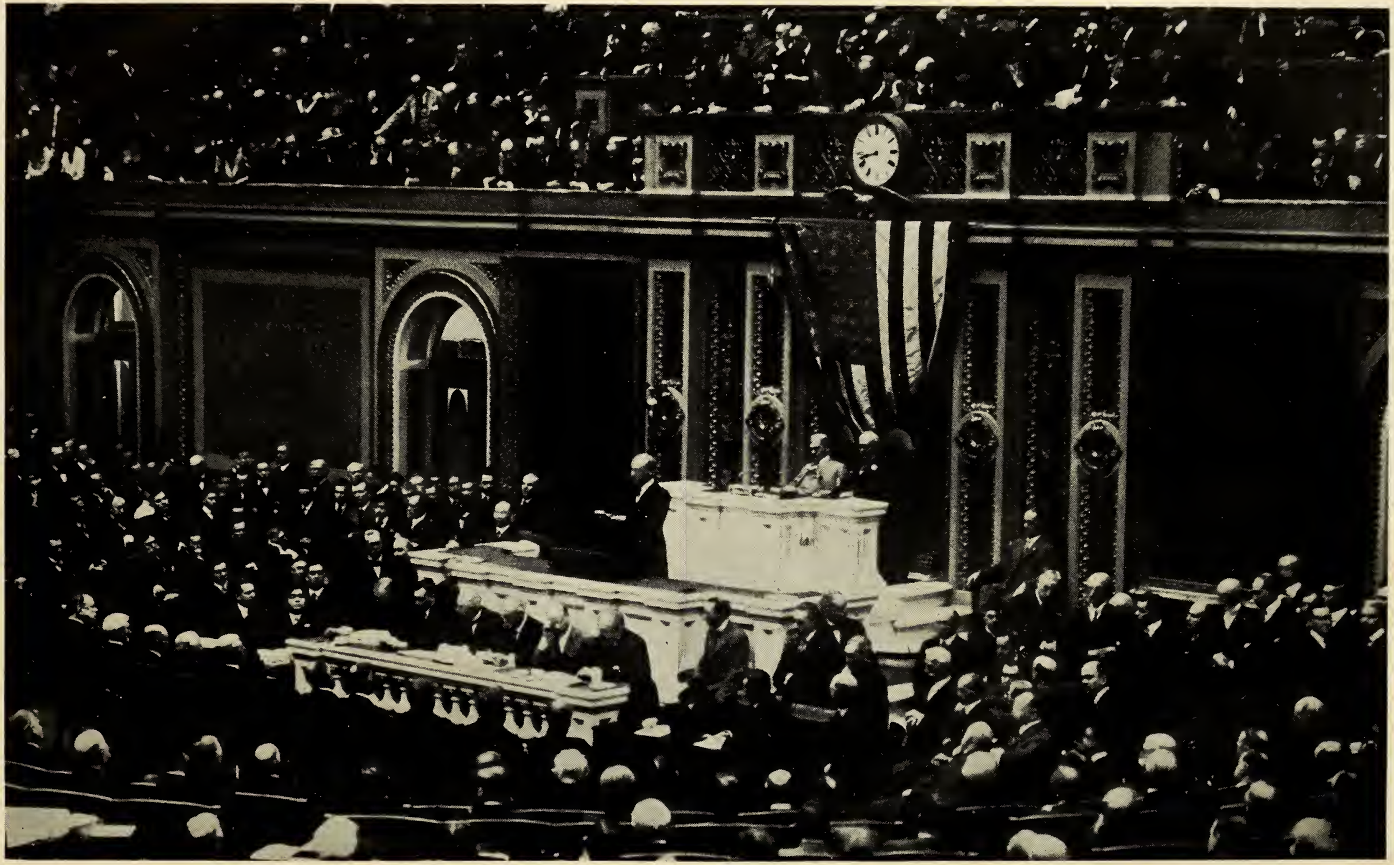

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PRESIDENT WILSON DELIVERING HIS WAR MESSAGE BEFORE JOINT SESSION OF CONGRESS ON MONDAY NIGHT, APRIL 2, 1917

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE NATION'S GREATEST NEED

By Colonel Dion Williams, U. S. M. C.

Motto: "For God and Country."

The question of preparedness has come to the fore during the past two years as never before in the history of this country, it has been the theme of public speakers and writers, political parties have used its tenets as planks in their platforms, societies of patriotic men and women have worked for its success, and teachers and ministers of the gospel have preached for or against it.

The greatest tangible result of all of this interest in the problems involved is seen in the enactment into law of a building program for the navy, to extend over a term of years, with the laudable object of giving us at the end of this term a navy of such quality and quantity that it will insure an adequate defence of the country and its policies.

The various offices and bureaus of the navy have taken up the question of preparedness in material in a more complete and systematic manner than has resulted from any previous efforts; the great manufacturing concerns are also earnestly interesting themselves in an intelligent endeavor to cooperate, and plans are being matured which will make practicable the mobilization and coordination of all of the industries of the country if the general call to arms should come.

In the army large appropriations have been made to perfect the land defences of the principal ports of our continental and outlying possessions and to provide a reserve of guns and munitions which will make it possible to put an army in the field.

While many millions of dollars are being expended to provide all of the material elements called for by this policy of preparedness, including warships of every class, great guns for ship and shore, aircraft of all types, and increased reserves of munitions and supplies, no law has as yet been enacted which will insure that a suitable reserve of trained men will be ready should war come and inevitably bring with it the urgent necessity for a very great expansion of personnel in both the army and the navy.

The growing interest of the leading thinkers of our country in the question of general preparedness and especially in the important element of the subject which has to do with the personnel is an encouraging sign. Even in the case of the writers and speakers who oppose any form of military training or universal service, their very opposition proves that the question is a live one, that it is before the public and must be decided for weal or woe.

It is probable that if as late as two years ago anyone had openly advocated universal military service in this country he would have been met by well-nigh unanimous condemnation, but the events of the Great War in Europe have written their lessons on the walls so that "he who runs may read," and the consideration of these lessons is bringing the conviction to many of our best thinkers that only by some efficient form of universal military training can our nation hope to be able to meet its possible enemies with fair prospects of success.

Reference to some of the written and spoken arguments and opinions of leading Americans upon this subject will serve to disclose the basis of their thought and the processes of reasoning which have led them to their conclusions, and will show what should be done to convince the doubting ones that only by some efficient form of universal military training may we hope to keep our country at peace with honor or to defend it in the hour of need.

The present Secretary of War, who has ever been an ardent advocate of peace, in a speech at Philadelphia on December 16, 1916, is quoted in the public press as follows:

> Preparedness comes to us as the result of what is going on in Europe. Our standing army is in the nature of a small police force and is inconsistent with the steady growth of population in the United States.
>
> We have realized by the European War that modern war is different from any kind of war which we have ever thought about or participated in, because of the intricate agencies employed in present-day warfare.

> Preparedness includes a better coordination of the industries of the nation, the development of a spiritual attitude and a complete change in economic and social life.
>
> We've learned the necessity of military training; that modern war involves enormously larger forces in proportion to the population; that it means a complete abstraction of men of all classes from occupations and business.

These concise statements should prove to the "peace at any price" propagandists who advocate disarmament and non-resistance, while hiding their inner cowardice behind a smug face of assumed righteousness, that the idea of universal military training is not incompatible with a keen desire for peace with all of its blessings.

The Honorable Champ Clark, one of America's foremost statesmen, in a recent article in the *Independent,* expressed the following opinions on the subject under discussion:

> If we attend to our own business we will never have another war.
>
> The people are not willing to see this country turned into an armed camp.
>
> I do not believe there is a nation on earth that has little enough sense to attack us, I do not care a straw which one it is; and I have abiding faith that if one of them does attack us it will get licked in the end.

The first statement reminds us of the story of the countryman who, hearing his large watch-dog barking fiercely, went to investigate and found a stranger treed by the dog in the front yard. "Come down," said the farmer, laughing, "that old dog won't bite." With proper caution for his own safety, the stranger replied, "Perhaps he won't bite, you may know it and I may know it, but the dog, maybe he don't know it."

Agreed that we as a country will "attend to our own business" and never make war on any other country, can we promise that the other country will also "attend to his own business" and not make war on us?

Granted that at present the majority of our people "are not willing to see this country turned into an armed camp," it is possible, yes, probable, that, unless we are so thoroughly prepared in men, in material and likewise in spirit, as to preclude the possibility of an attack upon us having fair prospects of success for the attacking nation, we *will* see this fair country turned into an armed camp whether we are willing or not, for the enemy will decide the question for us unless we are ready.

If that should come and find us still unprepared, we may still have abiding faith that we will win in the end; but at what a frightful cost in the lives of our brave but untrained men who will have to meet the trained and disciplined armies of the invader.

> " Sons of the sheltered city—unmade, unhandled, unmeet—
> Ye pushed them raw to battle as ye picked them raw from the street.
> And what did ye look they should compass? Warcraft learned in a breath,
> Knowledge unto occasion at the first far view of Death? "

There is another class of American, and by no means a small class who say, " We do not want to hear of this terrible war, it is all too horrible, the papers should not be allowed to print the details of these horrors ! " and again, " Thank God, all the horrors of this war are too far removed by the widths of two great oceans from our fair land; such a war can never come to our shores."

The mental processes of such persons must be akin to that of the simple little ostrich,

> " I'll hide my head in the sand he said,
> And they won't know where I am."

In this line there is another fallacy that has had a widespread popularity since the days of '76, and that is that every American boy is a natural born sharpshooter and that " every farmer boy is born with a gun in his hand." Any officer of the army, navy or marine corps who has had occasion to superintend the training of recruits in rifle practice knows that but a small percentage of them can be found *who have ever fired a rifle before enlisting*.

In the early days of our country when the population consisted of a few millions gradually winning their way westward, when wild game shot by the hunter's rifle formed a most important part of the daily rations, and when every man had to be ready to meet the hostile Indian, it was doubtless true that nearly every man knew how to use a rifle; but with the increase in the population, the gradual settlement of the country from ocean to ocean and the occupation of most of the lands for towns or farms, the game became scarce, the hostile Indian disappeared and the rifle as a means of providing food or protecting the home fell into disuse, until to-day but a small percentage of our people have any knowledge of its use.

One of our noted jurists is credited with saying that " the laws of to-day are made up of four halves, prejudice, precept, opinion and precedent; different lawyers taking their choice of two halves to make a whole to suit their clients and themselves."

Be that as it may, the military reasoning of to-day is made up of but two halves, opinion and precedent, the precedent derived from the wars of the past and the opinion, formed after careful study of these precedents, as to the best means of applying their lessons to the problems of the present and the future.

Accepting this as a fact, it becomes necessary to review the methods employed during our past wars in order to determine the proper policy to be pursued in training the personnel of the nation to be ready for its defence in the future.

During the Revolution the American Navy was manned almost entirely by volunteers, the inducements offered in this service were far greater than those offered by the land service, the rich commerce of England presented many opportunities for profitable captures, and as a fair proportion of the value of the ships and cargoes so captured was divided among the crew as prize money, the possibilities of acquiring fortune while also patriotically serving the country were many.

In addition to these facts, the colonies had at the beginning of the war an immense number of merchant ships engaged in profitable trade all over the world, and as many of these were forced from their commercial routes by the war, a large number of hardy and well-trained seamen found themselves thrown out of employment.

In those days the principal difference between a man-of-war and a merchant ship consisted in the fact that the former mounted more guns than the latter, as the armed merchantmen was then the rule.

The conditions of the times are well described in that great work, The Influence of Sea Power upon History, as follows:

> As to the sea warfare in general, it is needless to enlarge upon the fact that the colonists could make no head against the fleets of Great Britain, and were consequently forced to abandon the sea to them, resorting only to a cruising warfare, mainly by privateers, for which their seamanship and enterprise well fitted them, and by which they did much injury to English commerce. By the end of 1778 the English naval historian estimates that American privateers had taken nearly a thousand merchant ships, valued at nearly £2,000,000; he claims, however, that the losses of the Americans were heavier. They should have been; for the English cruisers were both better supported and individually more powerful, while the extension of American commerce had come to be the wonder of the statesmen of the mother country. When the war broke out, it was as great as that of England herself at the beginning of the century.—Mahan.

On the land we find that the colonies relied upon two classes of soldiery, the continental army and the militia; the former were supposed to be a federal force supported by the federal government but furnished pro rata by the several colonies. The Congress provided for a national army of continentals, but the colonies refused to give the Congress the authority to enforce enlistments; and the direct results of this short-sighted policy were that, although the several colonies furnished to the continental army during the war the grand total of 231,771 men, the greatest number that General Washington was ever able to lead into battle was not over 17,000, and the war was needlessly prolonged and the expenditure of blood and treasure made vastly larger than would have been required had a firm policy of universal service and conscription been adopted at the start.

In other words, the voluntary system was a failure, and to save the cause, the Continental Congress and the several colonies had to resort to the system of offering bounties to induce men to enlist. This system was used in obtaining recruits for both the army and the navy, and it has endured in one form or another to the present day. To-day we have it in the form of an offer to pay a postmaster five dollars for each recruit he obtains.

> Any system of voluntary enlistments necessarily places a government in the position of a suppliant, and when patriotism no longer suffices to fill the ranks, resort must be had to the vicious practice of giving bounties to recruits. Even at that early day the letters of Washington refer to the bad effects of this practice.—UPTON.

The question of a standing army versus a volunteer or militia army came up early in the Revolution, and General Washington thus voiced his opinion on the subject:

> The jealousy of a standing army and the evils to be apprehended from one are remote and, in my judgment, situated and circumstanced as we are, not at all to be dreaded; but the consequence of wanting one, according to my ideas formed from the present view of things, is certain and inevitable ruin. For, if I was called upon to declare upon oath whether the militia has been most serviceable or hurtful, upon the whole I should subscribe to the latter.—WASHINGTON.

Yet, in spite of the needs of the country so ably expressed by its greatest general of the time, we find that the country went into the War of 1812 still relying upon an army made up of volunteers and state militia. The inevitable consequences were that in the less than three years duration of the war there were enlisted or drafted into the armies of the United the immense number of 522,654 men.

> In contrast with our reckless extravagance in employing more than a half million of men the largest force of British regulars opposed to us was 16,500.—UPTON.

Fortunately for the salvation of the country it had been found necessary to establish a regular navy during the first decade following the Revolution, and at the opening of the War of 1812 we had a small but very efficient navy. That this navy was of inestimable value to the country, and that its very existence as compared with the non-existence of a regular army proves the necessity for a proper preparation of a personnel ready for war, is ably stated in the following quotation:

> In the War of 1812 the discipline and victories of the navy alone saved the country from dishonor. On the land the historian of the army was glad to slur over needless disasters, to dwell on the heroism in the open field displayed by the regulars at Chippewa and Lundys Lane.—UPTON.

The navy of 1812 consisted of a few fine ships built as men-of-war and manned by less than 5000 men, assisted by privateers manned by the hardy merchant sailors of the day; and it has been authoritatively stated by historians of the period that had that navy been "twice as large the war would only have lasted half as long."

The Florida Indian War, lasting from 1836 to 1841, by its nature called for little action on the part of the navy, but it again showed the value of having a wide-spread military training, for it proved,

> That for want of a well-defined peace organization, a nation of 17,000,000 of people contended for seven years with 1200 Indian warriors and finally closed the struggle without accomplishing the forcible emigration of the Indians, which was the original and sole cause of the war.—UPTON.

The Mexican War found us with an efficient navy, but with little distinctly naval work to do since Mexico possessed no navy worthy of the name; and with a very small but very efficient regular army, which in the first campaign under command of General Taylor completely overthrew the power of the enemy in the great territory of northern Mexico, and enabled its commander to report at the close of that campaign as follows:

> Our victory has been decisive. A small force has overcome immense odds of the best troops that Mexico can furnish—veteran regiments perfectly equipped and appointed. Eight pieces of artillery, several colors and

standards, a great number of prisoners, and a large amount of baggage and public property have fallen into our hands. The causes of victory are doubtless to be found in the superior quality of our officers and men.—TAYLOR.

That this very efficient force was too small to finish the war, and by a second rapid movement capture Mexico City, is another proof of the extravagance of depending upon untrained volunteers in war. General Scott, ably assisted by the navy, landed at Vera Cruz and advanced upon Mexico City, but when he reached Puebla, within three days' march of the main objective, the enemy's capital, his force was reduced to about 5000 effectives and he was forced to halt there for several months awaiting reenforcements. Had he been furnished an adequate force and had the country possessed a large number of men with military training to draw upon, the war would have been concluded much sooner with correspondingly more gain to our prestige as a nation, and proportionately less expenditure of men and money.

During this war the United States Army employed 31,024 regulars and 73,332 volunteers, a total of 104,356; while the maximum strength of the Mexican forces never exceeded 35,000 men.

With all of this rich experience available at the opening of the Civil War the regular army had but 16,367 officers and men, and the navy consisted of 6 sailing ships of the line, 10 sailing frigates, 21 sailing sloops of war, 3 sailing brigs, 6 steam sloops, 4 steam side-wheel sloops, 8 second-class steam sloops, 1 second-class side-wheel steam sloop, and 9 third-class steamers; nearly all of which were wooden vessels and most of which were antiquated and of little use for war purposes. The personnel of the navy consisted of 8530 officers and men in the navy and 1287 officers and men in the marine corps.

While a large proportion of the officers of the army cast their lot with the Southern Cause, a comparatively small proportion of the officers of the navy did so; this was probably due to the influence of the life of the sailor, which took him away from the proximity of his native state at an early age and tended to break the ties that bound him thereto, while it correspondingly increased his allegiance to the central government.

Had the navy at this time been adequate in size and power to the needs of a nation of 25,000,000 people, the effect would doubtless have been to greatly lessen the duration of the war; and had the regular army been large enough to have enabled the

President to send 20,000 regulars to the Battle of Bull Run, the war might have been stopped on that battlefield.

As it was, the war started with "two armed mobs" opposing each other; the hard school of actual experience made those who survived the ordeal the best soldiers in the world, and the history of the time is filled with the records of the gallant deeds of the brave men who volunteered on one side or the other; but the lack of a trained national personnel to draw upon for the necessary recruits to fill the depleted ranks after each campaign made it necessary to prolong the war until the stronger side won by the slow process of attrition.

This great war marked the passing of the privateer and the concentration of all of the sea forces of the country into a national navy under the absolute control of the central government; and it also saw the last of the bodies of irregular troops that had in other wars attracted many adventurous spirits of the free lance type, who, while brave and patriotic according to their lights, found the discipline of the regular service irksome.

The privateers on the sea and the roving bands of irregulars on the land represented the very antithesis of discipline and the efficiency that comes from discipline; for discipline makes for coordination of all of the elements of a nation's power, for cooperation in its largest sense, and for concentration of effort in a common cause. These irregulars passed out both on land and sea not only on account of a growing respect for the so-called "rules of warfare" that the nations were evolving by treaty or common consent, but more because of their inefficiency when pitted against trained and disciplined forces.

The untrained volunteer is only one step higher than the "irregular," his preparation for military service is no better and his patriotism is probably no higher, but, since he is enrolled in an official force, there is a hope that he may ultimately learn discipline in the hard school of actual warfare.

The history of the Civil War should have convinced all thinking men of the futility of the volunteer system as a main dependence in war, and of the prime necessity for a universal training, in discipline, in military drills and duties, and in morale as well, that would have made the citizens of the country ready for the call to arms should such a course become the last resort.

The war with Spain came not without ample warning; for years the unsettled conditions in Cuba had led to discussions in the halls of Congress and in the press as to the advisability of intervention in that unhappy island; and the sinking of the *Maine* was but the match that lighted the fuse. Yet the opening of the war found us with an army of only 30,000 men widely scattered at many posts, and a navy of 8000 sailors and 2000 marines, a number too small to fully man the ships then in commission, not taking into account warships purchased abroad at the opening of the war and the merchant vessels and yachts taken over and converted to war purposes.

The first naval campaign of the war was quickly carried out and ended in a decisive victory; as our greatest naval historian so aptly expressed it,

> On May 1, Commodore Dewey by a dash, the rapidity and audacity of which reflected the highest credit upon his professional qualities, destroyed the Spanish squadron at Manila, thereby paralyzing also all Spanish operations in the east. The government of the United States was thus, during an appreciable time, and as it turned out finally, released from all military anxiety about the course of events in that quarter.—MAHAN.

Commodore Dewey's squadron consisted of ships which had been in commission for some time with but few changes in personnel, the men had been drilled together until they were thoroughly trained and disciplined, and had confidence in themselves and in their officers, and the results of the Battle of Manila Bay bear ample proof of the value of such training.

The ships of the Atlantic fleet at the opening of the war were likewise manned by well-trained and disciplined crews, and here again the value of such training and discipline was clearly demonstrated during the long vigil before Santiago and by the decisive victory over Cervera's ships when he attempted to run the gauntlet and escape.

But back of these first crews there was no trained reserve, and had the enemy gained a temporary advantage or possessed a navy superior in ships to our own, we would have been forced to man newly built or acquired ships with green men.

The army was not so fortunate, it did not have sufficient men to furnish garrisons for the fortified posts at home and at the same time equip a small field army for service in Cuba and Porto Rico, and additional men had to be obtained to meet the emergency.

As in other wars, the President's call for volunteers went forth and men in sufficient numbers volunteered, but, though by no means lacking in patriotism or personal bravery, they were untrained and undisciplined, and, as in our other wars, valuable time was lost in organizing, equipping and training the volunteers.

During this short war an outstanding manifestation of the serious results that follow in the wake of a lack of preparatory training and discipline was the spread of epidemic disease among the volunteers in the concentration camps, which proved far more deadly than the bullets of the enemy. It was only a repetition of history, again the volunteer system had failed.

In the Philippine Insurrection the volunteers were better prepared, since they had been given some training during the War with Spain to prepare them for war service; but it became necessary to reorganize the state troops into regiments of United States volunteers, in order that the power to appoint and commission officers might be vested in the President and the War Department, and not be left in the hands of the different state governors.

This was a step in the right direction, but after the subjugation of the Philippines we went back to the old system of state troops as represented by the State National Guards, and when it became necessary to send a force to the Mexican Border to protect American interests from bandit raids, the state troops were again called to the colors. The results are so patent and so recent that no detailed account is required here; it is enough to record that the volunteer system has failed again.

At the close of the Civil War the United States Navy was the most powerful in the world, but, torn by the internal strife of four long years and self centered upon the great work of reconstructing the nation from within, the people gave little thought to dangers from without the nation, and the proud ships were tied up at the navy yard wharves to rot while their crews went back to the pursuits of peace.

The rehabilitation of the navy began in 1883 with the authorization of the *Dolphin, Atlanta, Boston* and *Chicago,* and proceeded by irregular increments until the First Session of the present Congress passed the first act embodying an increase in ships in accordance with building program extending over a term of years.

It is estimated that upon the completion of this program the naval service should have a trained personnel of 210,000, including 175,000 in the line and staff of the navy and 35,000 in the marine corps. This is the first line and it must be ready for instant service at all times, but back of it there must be a second line composed of the land forces, and for this second line it is estimated that we should have an army of approximately 400,000 men.

We now have an authorized enlisted strength of 78,000 for the navy, 15,000 for the marine corps, and 138,899 for the army; and in the efforts to obtain the necessary men by voluntary enlistment we have three separate sets of recruiting agencies in the field, each conducting a campaign of advertising by letter, in the public press, and by brilliant colored posters that scream at the passerby from dead walls and billboards, each telling the people the manifold advantages of its particular service, and each having difficulty in getting the number of men required.

These three services in the field bidding against each other for the popular favor of the men who care to enlist in the service of their country for their own pleasure or profit, whether imbued by patriotic motives or not, may be likened unto a man selling his own goods at auction, bidding against himself to raise the price and then buying them in when the price has reached its upper limit.

An increase in the pay of enlisted men has been proposed as a means of obtaining the necessary enlistments to meet the increase in personnel authorized by Congress during its last session, but while this might answer as a temporary expedient the effect would not be lasting, since the bidding would still go on, and the other branches of the service would have to meet the rise and bid still higher to get and keep the needed men.

The difficulties encountered by the services in obtaining sufficient enlistments are shown by the statements of the heads of the various branches.

In the statement of Admiral William S. Benson, Chief of Naval Operations, made on November 29, 1916, before the Committee on Naval Affairs of the House of Representatives, the following appears:

> *Mr. Kelley:* In view of the fact that there are only 14 capital ships out of a total of 37, in commission, does not that pretty clearly demonstrate that the greatest problem that we have before us now in the question of the shortage of men?

> *Admiral Benson:* Yes; and officers as well, sir. If anything, we are quite as short in officers, if not more so than in men; but that condition, of course, will soon be remedied by the graduates from the Naval Academy. If we can get the graduates from the Naval Academy, the officer problem will be taken care of.

In the statement of Rear Admiral Leigh C. Palmer, Chief of the Bureau of Navigation, made on December 4, 1916, before the same committee, the following appears:

> *Admiral Palmer:* After the bill was passed steps were immediately taken to establish new (recruiting) stations, begin advertising, and to get the people in. It takes a considerable time to get the information out to the people and get results. In the month of November we made a net gain of 610; that is in the one month of November. These figures are not absolutely correct, because they are made up from the mail communications that we get in daily and the report of a man who enlisted a month ago on the Asiatic Station, for instance, comes in to-day with a man who has enlisted to-day.
>
> *Mr. Oliver:* Right in that connection, do you recall how many men you actually enlisted and how many went out during the month of November?
>
> *Admiral Palmer:* One thousand eight hundred and two came in and 1232 went out.

In the statement of Major General George Barnett, Commandant of the Marine Corps, made on November 27, 1916, before the same committee, the following appears:

> *Mr. Oliver:* Do you find that the applications for enlistment continue large, and that you have no trouble in supplying the personnel?
>
> *General Barnett:* I will not say that we have no trouble, but all I can say is that we have been as successful as any other branch of the service. We are working under very adverse conditions, because, as you all know, there is a very great demand for labor in every field of life to-day, and we have to compete against that, and there is no better barometer of the times than a recruiting record.

In the statement of Major General Hugh L. Scott, Chief of Staff of the United States Army, made on December 18, 1916, before the Committee on Military Affairs of the House of Representatives, the following appears:

> The volunteer system cannot now, under the most favorable circumstances produce anything like the number of men required for the national defence. It is undemocratic, unreliable, inefficient and extravagant. It is undemocratic because it shifts the burden of national defence from the shoulders of the many where it rightfully belongs to the shoulders of the few whose financial condition in life or whose patriotism impels them to offer themselves to accept the risks and hardships of war. Furthermore, instead of unifying our people to the extent where all individuals are willing to undergo sacrifice for the national good, it affords great opportunity for

> the selfish and nonpatriotic to stay at home in time of war and to fatten on the adversity of the nation and on the necessities of the families of better men who have volunteered for the country's defence.
>
> It is unreliable as all history teaches us. It has never in times of great national stress in this or any other country been able to provide the number of men needed for the emergency. It has been tried and discarded by all of the other great nations of the world and to-day the United States and China are the only nations of size upon the globe which rely upon volunteers for the defence of national existence.

These statements of the highest naval and military officials of the government point out the difficulties that are met in all branches of the service in the attempts to secure a sufficient number of enlistments to keep up the establishments on a peace footing, and it seems reasonable to assume that these difficulties will increase in proportion as the services are increased to meet the nation's demands for preparedness in personnel.

They show that the maintenance of a sufficient force of men in the army and navy by means of voluntary enlistments depends upon the economic conditions of the country and upon the popularity that can be worked up for the services by advertisements and personal appeals, and not, as should be the case, upon the absolute military and diplomatic needs of the country as determined by the international relations and our own national policies.

They also tend to show the failure of the present national guard system as a reliance for war's emergencies. On December 21, 1916, during the hearing of the chief of staff of the army before the Committee on Military Affairs of the House of Representatives, Representative John Q. Tilson, a member of the committee, formerly an officer of United States volunteers during the war with Spain and now a colonel in the national guard, said:

> I agree with you that voluntary military service is not an adequate system and probably would break down in time of war as it has done before. The national guard system in particular is economically unwise because of the dual control over the forces by the federal government and the states.

The experience of the author of this statement as an officer of the national army, as an officer of a state national guard, and as a member of the House Committee on Military Affairs should qualify him to speak authoritatively upon the subject, and if his statement is correct as applied to the land forces it must be equally true as regards the state organizations of naval militia.

The great Napoleon is credited with saying that "In war the moral is to the physical as three to one," and, however, true this may be, it is unfortunate that the prevalent opinion in America that our people are the bravest and most patriotic in the world should have given rise to the delusion that an army made up of a collection of men individually animated by the highest ideals of patriotism could go forth to battle without military training or study with prospects of overcoming a trained military force.

Patriotism, bravery, respect for the right and individual courage may make men ready to die in the defence of their country, but these virtues, great as they may be, do not make soldiers of men without that training and drill which teach them discipline, the powers and limitations of the arms they bear or man and the proper methods for employing such weapons, and, last but not least, give them that feeling of cohesion and interdependence that is called *esprit*—the soul of an army.

We have been called "the most warlike and the least military nation on earth," and if anyone doubts the truth of the statement let him look through the columns of our daily papers and listen to the speeches of our fire-brand orators, bristling with defiance to the world and bold assertions that "we can thrash any nation on earth," that "no country would dare to go to war with us and if they did they would be obliterated," that "any army landed on our shores would be driven into the sea," and other vainglorious boasts of a like nature; and then let him count up what proportion of the male population of the country has had any training whatever in military duties.

It may also be said that if we were more military we would be less warlike, for then we would be better able to view things in their true proportion and to realize that to put a uniform on a man and give him a rifle to carry does not make a soldier of him over night, that the trained man of one country is no better than the trained man of another country except in that his training has been more careful or more thorough, and that no race or nation has any monopoly of courage or bravery.

We have been called an undisciplined nation and not without cause, since from a military standpoint discipline may be defined as the cheerful, unquestioned and implicit obedience to the orders from higher authority in such a manner as to secure systematic action and cooperation of all the component parts of a military force.

Many of our people do not like to take orders or obey them, when a traffic policeman on the corner holds up his hand the motorists and drivers stop with grumbling and criticism, the theory that one man is as good as another if often mistaken to mean "one man (myself) is better than the other," liberty is often mistaken to mean license, and the volunteer dislikes to salute the officer under whose command he finds himself suddenly thrust, although this salute is only the outward manifestation of discipline.

The needed discipline can only be secured by a complete system of universal military training, extended over many years until our people learn that discipline and obedience to just laws and regulations made for the good of the people, which means the state, work as surely for efficiency and profit in the arts of peace as they do for victory in war.

What we have to strive for, then, is a condition where every man will be ready in training and in *esprit,* and eager to be a sailor or a soldier to defend his country as a paramount and righteous duty and not for the wage his country gives for the service nor from fear that he may be handed the white feather if he does not so serve.

This ideal can be obtained by the enactment of laws which will require every male citizen to undergo a course of training in military drills and studies, in discipline and in morale which will fit him to serve his country as may be required in the capacity to which he is most suited. The details of such a general scheme must be carefully worked out after a study of the methods employed by other nations and due consideration of the conditions peculiar to our country and our people, and while a discussion of them has no place within the scope of this paper, some of the salient features may be noted.

In a country like ours, where so much attention is given to the education of the young and where compulsory attendance at schools is required by law, the necessary military training should be given in a manner to interfere as little as possible with the general educational scheme. This might be accomplished by a wide extension of the system of military education and drill now in force at many schools for boys, and the application of such a system worked out in accordance with the laws to all of the public and private schools of the country, such early training being supplemented by actual service with the colors aboard the ships of the navy or in the coast fortifications or regiments of the field army for a term long enough to give the necessary finish to the training, but not so long as to seriously interfere with the ultimate employment of the great mass of the young men of the land in their peaceful pursuit of a livelihood on the farms, in the shops and factories or in the business offices.

This first period of service completed each man would pass into the reserve and in subsequent years would be given periods of training service to keep him fit in a military sense, the length of such periods of training growing shorter with the years of service. In the course of the training the physically unfit would of course be excused from strictly military training, but they should still be held liable to serve in the factories or on the farms according to their aptitude and physical ability.

In the case of an army and navy made up entirely of volunteers the underlying motives which have induced the individual men to enlist are many and varied: love of adventure, a desire to travel and see the world, the choice of the service as a profession, or to get away from unpleasant associations at home are some of the reasons given for enlistments in time of peace; while in time of war the two great motives are a patriotic desire to serve one's country be she right or wrong and the fear of being ridiculed or branded as a coward if one should stay at home in safety while his fellows are going forth to fight.

With universal training an accomplished fact a navy largely manned by professional sailors would still be required and all of the motives which now apply to peace times would still actuate those men who might wish to remain in the service for considerable lengths of time or to make it their life work; and a regular army would still be needed to perform the permanent duties and to furnish the *cadre* for the training and organization of the greater forces that would be called to the colors from the trained reserves when war should become imminent.

With universal training in force all of the young men of the country would be to a considerable extent acquainted with the duties, responsibilities and emoluments of the regular services and the field from which to obtain the men for the permanent services by voluntary enlistment would be greatly enlarged. Hence, there would be no difficulty in obtaining by voluntary enlistment the men required for the peace time establishments of the army and navy, and in addition, these recruits to the regular service would come in with their preparatory military training completed, thus making it possible to do away with the courses of training now maintained by the regular services in naval training stations and at army recruit depots. This would result in a saving of money and time and an increase in the efficiency of the regular navy and army.

With a volunteer system alone in force, in time of war only the most patriotic enlist, and these are not necessarily the most fit for the duties for which they so gallantly volunteer. With the system of universal training and liability to service in force, each man would be appraised according to the value of his services to the government, and accordingly, he would be sent aboard ship as a sailor, into the forts as a heavy gunner, into the infantry with a rifle, into the railway service back of the lines, into the shops to make munitions, or onto the farms to produce food for the fighting forces and for those who must stay at home.

With a volunteer system in force, an able bodied man who does not "go to the front" during war is looked upon askance, and to "stay at home" soon comes to be considered a disgrace; while with the universal service system in force, it would be no disgrace to "stay at home" provided one were serving the country in that position where his services would be of the greatest value.

In all of our wars of long duration the volunteer system has failed to supply the number of men needed and recourse has been had to the obnoxious system of drafting men by lot; obnoxious because after the ones patriotic enough to volunteer have been exhausted the draft draws the unwilling ones, and they go to the colors to be looked down upon by their comrades who have volunteered. Such a condition is distinctly harmful to *esprit* and morale since it draws a line of demarcation where none should exist and prevents that cooperative spirit of brotherhood in arms which results in discipline.

Where all are ready for the duties and subject to the call when the necessity arises there can be no line of demarcation between one class and another and the government receives the best service that its citizens can render; and none but the best service will avail against the persistent attacks of a brave and tenacious foe carefully trained and imbued with the spirit of his own country's "rights," however, different these "rights" may be from our conceptions of our own rights.

There is another effect that arises from voluntary service that would be entirely obviated by the universal service system. The volunteers that go forth with the cheers of their friends at home ringing in their ears to distant service under trying conditions, with little chance for any real action to enliven the ennui, as has been the case with the militia recently sent to the Mexican Border, may soon lose enthusiasm and begin to wonder why they should do the drudgery for the nation while their fellow citizens at home enjoy opportunities for added profit on account of the lessening competition due to the absence of the volunteers.

As a result of this many of the home-coming volunteers exclaim, "Never again for me, no more volunteering; if *everyone* is subject to the call I'll do my share, but I don't intend to do it all while brother Bill stays home and draws down the pay for my vacant job."

Many of the most pronounced advocates of the policy of disarmament are to be found among the ministers of the gospel, and the advocacy of this policy carries with it a firm opposition to any increase of the army or navy, either in matériel or personnel.

A text frequently used as the basis for argument by these extreme pacificists is from Christ's Sermon on the Mount:

> "Whosoever shall smite thee on the right cheek, turn to him the other also."

Yet, among these same ministers of the gospel we also find those who fearlessly advocate preparedness in men and material as the surest means of maintaining the peace of the nation and of the world.

In a sermon at the celebration of the 150th anniversary of the opening of St. Paul's Chapel, at New York, on October 30th of this year, the rector of that church, the Reverend William Thomas Manning, S. T. D., most ably advocated these views in the following stirring words:

> We need a great reawakening of the spirit of true Americanism, and a great reconsecration to our national ideal. There are influences at work to-day which are operating definitely to weaken the spirit of patriotism. The word pacificism has come much into vogue in recent time. If by pacificism is meant only a desire in every way possible to remove the causes, and lessen the likelihood of war then we are all of us in sympathy with it. In this sense our most earnest pacificists are the officers of the United States Army and

Navy, who know what war means, and who would be the first to give their lives if war came.

But if by pacificism is meant the teaching that the use of force is never justifiable, then, however, well meant, it is mistaken, and it is hurtful to the life of our country. And the pacificism which takes the position that because war is evil therefore all who engage in war, whether for offence or defence, are equally blameworthy, and to be condemned, is not only unreasonable it is inexcusably unjust.

The effort to identify the Christian religion with ultra-pacificism is a misapprehension of the truth and injury to religion. The Christian religion no more enjoins us to leave our shores unprotected against some brutal but efficient invader, than it enjoins us to leave our homes unprotected against murderers and thieves. If the Christian religion meant that we are not to protect those dependent upon us, and to make every effort to do this effectively, then I say that normal men everywhere would reject the Christian religion, and they would be justified in doing so.

But the Christian religion holds up no such mistaken ideal. The Christian religion is true to all the facts of life. Our Lord Jesus Christ does not stand for peace at any price, but for righteousness and truth, first and at all cost.

No one in this country wants war. As never before we see its cruelty and its horror. By every means that may be we want to see its livelihood lessened and its causes eliminated. But evil as war is there are still deeper evils. Bodily discomfort, physical safety, material prosperity are not the greatest things of life. War may hurt and kill the body. There are things that hurt and kill the soul. Every true American would rather see this land face war than see her flag lowered in dishonor, or her name touched with disgrace. Every true American would rather see this land involved in war than see her false to those principles of right, of freedom, and humanity upon which our life is built, and upon which the hope of the world depends.

We need in every part of our land, and among all classes of our people, a great reawakening of our sense of the responsibility which rests on us as citizens, of the duty that we owe to our country, and of the service that we owe to the state. In every true citizen of a republic there must be something of the soldier spirit the spirit of self-sacrifice, of devotion to duty, of willingness to give time and strength and, if occasion requires, life itself, in the service of his land. This spirit is of our very soul as a nation, but it seems to be less strong among us than it once was. It does not seem to burn in the hearts of our people as it once did. There are many of us whose thought seems to be far more of what our country owes to us, than of what we owe to our country.

And on this notable anniversary, in the presence of the representatives of our government, speaking with all possible care and deliberation, I wish to say that, not only from the standpoint of a citizen, but from the standpoint of a minister of religion, whose duty it is to advocate only that which is for the highest moral and spiritual good of our people, I believe there is nothing that would be of such great practical benefit to us as universal military training for the men of our land. The assertion that this would lead us into militarism need not be seriously considered. This assertion is made by those who are opposed not only to militarism, but to any adequate measures for military preparedness. The danger of a democracy is not that it may be carried into militarism, but that it may be found unprepared to defend itself against militaristic aggression.

I advocate universal military training because of its military effectiveness. It will make our land practically secure against invasion.

I advocate it because it is the only military system that is truly democratic. It puts all on one common footing. Its effect is a people trained and prepared for their own defence.

I advocate it because it will weld our nation together and help to make of our many races one united people.

I advocate it because of its moral and spiritual value. It will give us needed discipline. It will develop in us those high qualities of orderliness and system, of respect for authority, of obedience to law which are not the strongest points in our national character. It will tend to make our young men better Americans, better citizens, and better Christians.

The statement that any form of universal military service is not compatible with a republican form of government and that it is an attribute of monarchical institutions has been repeated so often by the advocates of a small army and navy that it has come to be accepted by the great mass of our people as axiomatic.

To demonstrate the fallacy of this conclusion requires but a brief survey of history, for if we consider the evolution of government from the early days of civilization to the present time, we see that a regular or standing army of hired professional fighters has been for centuries the means employed by despots and oligarchs to maintain their sway over the great masses of the people, while the best conception of a republic in arms for the defence of what it conceives to be its rights is that every man in the nation should be so trained and educated as to be ready and able to perform his share in the general defence, and to perform this share of the work where his efforts will most avail in the general plan, whether these efforts be expended on the battlefield, in the workshops making munitions or in the fields raising food supplies.

As a matter of fact it was the intention of the founders of our government to have no standing army or navy; the very idea of such a force was abhorrent to them as it savored too much of the monarchial ideas from which we had broken away in the Revolution. They believed that as "all men are created free and equal" it should devolve upon all men to support the country's burdens in peace and war, and to this end the Militia Act of 1792 required all able-bodied male citizens between the ages of 18 and

45 years to be given military training to make them ready for service in the army or navy in case of need.

This act provided no penalty for failure to carry out its provisions and carried no money to pay for the necessary arms, equipment and supplies; but, with the idea of states' rights then generally accepted, left all of the details to the several states.

The result was that the training of the militia was carried on in a desultory manner for a number of years with no concerted effort and no uniform equipment or method of drill; so that when it became necessary a few years later to protect our growing commerce on the sea from the depredations of pirates and barbarous states, a regular navy was perforce established to be paid for out of the national treasury, and a national standing army had to be organized and paid for from the same source to perform national police duties and protect the settlers from Indian depredations as "westward the star of empire takes its way."

From the first it became evident that a militia navy was not practicable but it was still expected that the naval personnel would be composed of volunteers, and while such a method may serve to obtain the number of men required for an army and navy for peace times and small wars, it will not furnish an army or navy upon which any reliance can be placed for a great war, since the number of men obtained by voluntary enlistment is always dependent upon the number of men who are willing to serve, and not, as it should depend, upon the number required by the problems to be solved in the conduct of the war.

Then again, the great mass of the men obtained by voluntary enlistment are untrained and undisciplined and hence not ready for service, in spite of their unquestioned individual bravery and patriotism.

We hear much discussion in these days as to the right of suffrage, as to who should or should not vote, as to limitations of immigration and qualifications for obtaining citizenship, and all of this shows the deep interest that the average citizen takes in his right to have a say in the administration of his nation's business.

It is only fair to assume that any man who is anxious to keep the right to cast his vote and thus take an active part in controlling the government of his country will also be anxious to take his part in the defence of the policies of that government when these policies involve the country in war.

To take an effective part in such defence requires the preliminary training in physique, morale, discipline and military technique that will make every able-bodied man ready in body and spirit to take up arms and follow the flag when the country calls.

Hence, it might well be considered just to make the acceptable performance of the necessary military training, or of some other form of special training that would best fit the individual to fulfill his highest duty to the state, one of the prime qualifications for the suffrage.

The nation by its laws requires every man to perform certain duties to the state, to serve on juries and to pay taxes for the support of the whole community, and it tells him he must do these things for the country's good; then why should not the laws require every man to pay the ultimate tax of his military service, or even of his life, if it becomes necessary for the salvation of the nation?

It is the nation's duty to see that its men are trained in readiness for this tax of service just as surely as it is the nation's duty to see that its citizens are educated to make them fit to cast a ballot and perform their other duties of citizenship.

No sophistry can excuse the slothful cowardice that hides behind the pet phrase of a music hall ditty and in syncopated chorus sings, "I didn't raise my boy to be a soldier." The jails of this country are filled with men who never had a fair chance to be good citizens, whose mothers did not raise them to be soldiers, did not by example and precept inculcate in them a spirit of discipline, but allowed them to learn the music hall and bar-room songs, while failing to teach them at their knee that brave old war hymn,

"Onward Christian soldiers,
Marching as to war,
With the cross of Jesus,
Going on before."

But patriotism still lives in the land, from Maine to California and from the cold northland to the sunny south, there are still patriotic mothers who bravely exclaim, "Yes, I did raise my boy to be a soldier, ready to fight for the right and his country's honor."

Rich in all that goes to make up material prosperity, our banks filled with a world's golden treasure, our granaries replete to bursting with a rich store of grain, and the produce of our mills and farms selling at bumper prices, we Americans are lulled by the siren song of this great prosperity into a fanciful sense of security that cannot be supported by the experience of other nations nor by the histories of other times.

In the histories of all times there are not lacking illuminating examples of the dire results that follow in the train of a lack of national preparedness to meet the attacks of any possible enemy.

In all of our own wars the volunteer system has broken down under the strain of actual service and we have had to resort to the "draft" to fill the ranks, but with no organized and legalized system of preparatory training in force, this eventual dependence upon a draft or conscription system has served only to bring to the colors untrained and unwilling men, and has resulted in inefficiency and the unnecessary prolongation of our wars.

Two solutions of the problem here presented are offered by the statemen whose duty it is to shape our country's policies and by the naval and military leaders whose duty it is to enforce these policies.

First. The maintenance of a regular army and navy so large as to deter any possible enemy from attacking us with prospects of success, raising the pay and the bounty for enlistment high enough to attract recruits in sufficient numbers.

Second. The training of every able-bodied male citizen in military duties and in discipline so as to make him ready for any service that the nation may demand.

Of these two possible plans, the first is manifestly impracticable from an economic standpoint, since its cost would be well-nigh prohibitive and it would take the cream of the nation's manhood away from the productive pursuits of manufacture and commerce and thus greatly reduce the earning power and prosperity of the country.

The second plan, which calls for universal military training, is practicable, easily within the limit of cost which the nation is able to pay, and, in addition, it would undoubtedly improve the whole personnel of the country physically, mentally and morally.

> It is, of course vain to except that the great majority of men should attain even an elementary knowledge of what constitutes the strength or weakness of a military situation; but it does not seem extravagant to hope that the individuals, who will interest themselves thus far, may be numerous enough, and so distributed throughout a country, as to constitute rallying points for the establishment of a sound public opinion.—MAHAN.

The natural leaders of the movement for the establishment of a public opinion which will demand the enactment of the necessary laws to put the universal military training of the manhood of the country into practical effect are the officers of the army and navy, who, by their training in the military life as a profession and their intelligent studies of the great wars of the past, are best fitted to judge of the requirements of the future.

Then let us be up and doing as a service and as a nation in a manner befitting our place in the world and our status as a great people, preparing not only on the material side, but also training the personnel of the whole land to be ready, both physically and spiritually, so that when comes the day of need, we may,

Flaunt our starry banners high,
Lift united voices to the sky,
And make our lordly battle-cry,
For God and Country we fight
To win or die.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

TACTICS AND GUNNERY

By Commander T. T. Craven, U. S. Navy

Foreword.—Strategy associates itself so intimately with national policy, public opinion, economics and the other important governmental interests that it is difficult to write comprehensively of the strategy of nations, other than that to which one belongs, because of insufficiency of knowledge regarding the local importance and application of these details.

Although it is not necessary to view naval tactics in the light of the multitudinous circumstances and events about which national strategy centers nevertheless, when discussing tactics and gunnery, one should have in mind the conditions applying particularly to the naval service of his own country. In what follows effort has been made to indicate briefly, details that appear as deserving of particular attention on our part, of deficiencies and defects which might have profound influences on our tactics and gunnery at sea or on the tactics and gunnery of possible antagonists.

Historical.—The study of the changes in weapons and in the complex methods of battle is absorbingly interesting, but there is little technical information, applicable at the present time to be gleaned from the close investigation of conflicts of the past. The augur with which, from a small boat, to drill into the hull of the enemy below the water line, has long since disappeared together with the wedge, once supplied to jam his rudder. The ram has gone after a brief reappearance following shortly after the advent of steam as a means for propulsion. The fire ship, at one time a formidable tactical unit, has sailed into oblivion with her valiant crew, and we find that the mobility of ships together with the power of modern ordnance have placed boarding in the category of being to-day almost an impossibility. Though artillery is strongly supplemented by other arms, the tremendous destructive force of the gun now ensures, to him having a better ability to hit rapidly with shell, the power to overcome surely every material characteristic in which the enemy may be the superior.

During the centuries in which reliance upon sails was had for locomotion at sea changes in the direction or velocity of the wind had a vital bearing on the issue of naval combat. These changes sometimes upset well-laid plans and the most careful calculations; frequently they permitted one side to avoid action or to escape after the conflict had opened. Ships with self-contained motive power, now with fair precision, measure opportunity for conflict through their superiority in speed, the ability to see the enemy, and the limitations of time and space.

Principles of Tactics.—The scientific development of the various arms and of the means for conveying them into battle has been particularly wonderful during the past two decades and has revolutionized the tactical employment of weapons. To-day many of the maxims of quite recent masters of the art of war are almost meaningless, but the study of the history of maritime operations discloses the truth of certain old and lasting tactical principles which may be stated briefly as follows:

(a) Tactics is solely for the purpose of promoting the effective employment of the armament and is based on efficient and confident use of the major weapon.

(b) Uncertainty, always a prominent factor in sea life, has made misleading and surprising the foe dominating features of naval tactics.

(c) The greatest tactical strength lies in dispositions which bring promptly a preponderance of aggressive force at the point of contact with the enemy.

(d) Good leadership with co-ordination of effort and tenacity of purpose on the part of all concerned in wide spread operations are requisites to success.

Principles of Gunnery.—The close perusal of history also points out that the basic principles of naval gunnery remain the same now as when artillery was first employed on shipboard. By principles is meant those fundamental requirements such as the necessity for expeditious loading; quick, exact determination of the range and estimation of the change of range, together with prompt, efficient sight setting and gun laying, all of which contribute to rapid hitting with the gun, the dominating instrument of naval war.

The details, important for investigation, then are the application of the above principles of tactics and gunnery to modern armaments and the influences of weapons which supplement artillery, upon the employment of the gun.

Game Board Deductions.—The game board furnishes the best means for the study of the geometric principles of fleet tactics, and the important relationship of time and space, provided proper regard is had for artificiality when the broad ocean and the circumstances of sea life are represented upon a flat table in a comfortable room. On the game board there is proneness to overlook the effects of low and varying visibility on both tactics and gunnery. Here there is no difficulty in locating one's position or in co-ordinating the navigational work of many ships regardless of time or conditions. The turmoil of battle does not disturb tranquility of mind; and the details important in the employment of arms, through which alone victory is gained, cannot correctly be simulated.

The two important points most clearly brought out by game board maneuvers are:

First.—That in tactics it is necessary always to preserve a better degree of concentration of force than does the enemy. Encourage the enemy to divide his strength; divide your forces when necessary but have care to maintain a condition which avoids confusion and interferences and affords a strong mutual support between all detachments at all times.

Second.—That it is desirable for every group of ships, employing guns as their primary armament, to keep target vessels under broadside fire and to preserve a line of bearing as nearly normal as possible to the bearing of the enemy.

The world-wide struggle now raging has subjected theories to an acid test of battle substantiating the correctness of these two theoretical precepts but also demonstrating the difficulty and uncertainty of complying with academic axioms. It will be long before unprejudiced and complete data become available regarding actions of the present war but any discussion of modern naval methods must have regard for the light shed upon them by the censored reports, however biased and incomplete, regarding the recent tragedies of such wide and intense interest. In studying the methods of the belligerents, and in measuring the results of their efforts, care must be had to retain a correct mental picture of the areas over which naval operations have been projected; the peculiar conditions obtaining because of the nearness to one another of the principals in the struggle; the restricted and well-defined lanes of communication; the shoal waters and especially the weather normally experienced in the North Sea and Channel. One must also have clearly in mind the military characteristics of the tremendous number of naval units employed by the warring nations.

Visibility.—Important indeed, as having a paramount influence on tactics and gunnery, have been the visibility conditions obtaining, affecting navigation, the discovery of the enemy, and the degree of definition of targets. There has been fighting during a great variety of circumstances—rough seas and darkness at Coronel—fog and mist at the Dogger Bank and at Heligoland—fine weather off the Falklands— and low visibility in the Battle of Jutland.

The inclination to abandon the routine exercises of peace during inclement weather and the tendency to seek always the most perfect conditions for target practice and maneuvers are natural but with them grows the practice of ignoring the possibilities of fighting under other than favorable circumstances. Coming together, somewhat unexpectedly perhaps, out of a fog or mist always has been a common experience of ships which, we may be sure, will continue in the future, as in the past, to be a likelihood of marine warfare. Tactical studies not having full regard for the possibility of unexpected contact are incomplete and perhaps confusing.

Let us, for a moment, consider details which become controlling when conditions for seeing are not the best.

Navigational Difficulties.—Uncertainty with regard to the whereabouts of ships underway becomes probable when the sky is overcast or seeing conditions are poor. This uncertainty grows as the period of unfavorable weather is prolonged or as the amount of maneuvering indulged in is increased. When the weather is thick, navigation is difficult, ships get lost, uncertainty commands, and co-ordinated wide-spread operations are impossible, particularly on the part of small craft which are not always navigated with the precision of larger units. Low visibility may frustrate all efforts of the tactician when in contact with the enemy.

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(Attention may be invited to the usefulness of a mechanical tracker as an aid to navigation in trying occasions, when there is much maneuvering and attention centers on other matters than dead reckoning.)

Inconspicuousness.—The importance of inconspicuousness has been clearly shown recently. At sea we will certainly not care to be more easily visible to the enemy than he is to us and we will not wish him to be able to identify our force while we are uncertain perhaps as to the composition of a concourse of vessels sighted unexpectedly.

The cage masts, two of which are erected on battleships and one on armored cruisers, are very prominent and well-defined structures of a fixed height, which might serve excellently to assist the enemy in obtaining and keeping the range as well as to furnish him always with unmistakable marks of identification. We should seriously consider whether or not the masts are entirely justified to-day or if less conspicuous structures for spotting, more closely resembling those carried by foreign capital ships, would not better fill the requirements of war.

Similarity in Appearance.—One can conceive of occasions when uncertainty regarding the identification of a single vessel might be a matter of very considerable moment. The ability to deceive the enemy in this respect we will not care to deny ourselves. It would seem important that all fighting craft of a navy, in so far as may be practicable, should resemble one another in appearance. At great distances a battleship should be difficult to distinguish from a cruiser, and the scout from the destroyer.

Once locked in gunfire, exactness in gun laying is necessary in order to hit and the distance of the target at which the artillery is directed must be known within exceedingly narrow limits when shooting at long range. With several vessels engaged a mistake of target by a ship or by part of the battery of a ship may make the difference between defeat and victory. The likelihood of such mistakes becomes very great when the targets look alike and are not readily designated from the fire control stations or held by the gun trainers who are easily thrown off by a yaw of the vessel or the shock of discharge of their own pieces.

Are not the chances of deceiving the enemy lessened by making new construction, from year to year, radically different in appearance from that already in commission? And might not marked differences in the appearance of ships composing the fleet simplify the problem of battle gunnery for the enemy which it opposes?

While the matter of hoodwinking the foe is under consideration one should note that the paint brush, always a pleasing implement to the sailor, recently has taken on a far greater prominence in naval affairs in the endeavor to mislead. The blending of colors and shading to create wrong impressions, to promote invisibility, and to eliminate definition for range finding and gun pointing has been found exceedingly desirable.

Smoke.—Formerly the smoke from the battery had an influence, almost controlling on both tactics and gunnery. To-day the discharge from funnels may be a most important interference encountered on the field of battle. Any one who has ever witnessed the evolutions of many ships has been impressed by the effects of the funnel smoke on proceedings. Ships using Welsh coal probably make somewhat less smoke than do those burning other fuels, but, under forced draft, a collection of coal consuming vessels always produces a black pall which might seriously hamper operations.

Under certain conditions, superiority in numbers would be nullified by the effects of smoke, which temporarily shut vessels completely out of the action and permitted concentration on others and their destruction in detail.

Ample evidence of the disturbing influences of smoke and of the tactical use of the smoke screen to shield destroyer attack and to cover the maneuvers or changes of course of capital ships when under the fire of a superior force has appeared in the published reports of recent actions.

* * *

The ability to control their funnel smoke is a very valuable military characteristic of oil burning vessels and, in the future, we may confidently expect smoke to become even a greater factor in the tactics of sea warfare than has been the case in the past.

Cruising Formation.—The disposition of ships in the cruising formation has been shown to be of the gravest concern, especially for large fleets requiring much sea room.

Dispositions always should guard against surprise on the part of the enemy but permit instant advantage to be taken of any situation in which the antagonist happens to be encountered.

When on soundings where anchored mines may have been laid, sweeping operations on an extensive scale, are necessary. Where floating mines or submarines may be utilized by the opponent, the capital ships will have to rely for protection during daytime, to a very considerable degree, on a screen of destroyers covering the advance of the major units and enveloping the head and both bow quadrants. The interval of this screen from the battleships and the distance between the vessels composing it depends on the visibility. The interval should be sufficient to ensure absence of danger from the torpedoes of a submarine. The craft composing the screen must move promptly to positions from which they will not interpose interferences with the major units in the event of it becoming necessary for the latter to open fire (The German fleet is reported to employ its torpedo craft in this manner).

It will be seen that a great many speedy destroyers are necessary as adjuncts to the capital ships.

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The usefulness and activities of the fast and handy destroyer have been augmented considerably by the guns, searchlights and the fostering influences of the fast cruisers utilized to support and to assist their operations. (The battle of October 17, 1914, off the Dutch Coast, in which the *Undaunted* and four British destroyers sank the German *S-115, 117, 118* and *119* furnished a striking example of the value of supporting high speed scouts and also of effective gunnery on the part of craft, the primary armament of which has always been considered to be the torpedo.)

The time necessary to attain the proper formation and to complete the final arrangements for conflict is ensured only by surrounding the vessels, on which the brunt of the encounter must fall, by a swarm of fast cruisers and alert scouts. The battle cruisers may be employed as tentacles to hold the foe until crushing force is applied. Without eyes and tentacles the mighty strength of an aggregation of battleships may be unable to assert itself intelligently or successfully. At times it may become necessary for the outposts to take long chances in the attempt to check or to hold the enemy.

When cruising at night, except in bright moonlight, the box screen of destroyers, is impracticable. It cannot stop a rush of the adversary's torpedo craft and it would constitute a serious menace to the safety of the entire fleet because of the difficulties of station keeping and the likelihood of the occurrence of confusion which it promotes. In darkness great ships desiring to avoid attack should turn into an area in which freedom from molestation on the part of enemy torpedo vessels may be expected. The attendant destroyers must then seek the enemy's main body or be interposed in the direction from which torpedo attack may be suspected. Destroyers will not approach the capital ships of their own force after nightfall.

Attention may be drawn to the importance of the training of the entire force combined for cruising in the presence of the enemy and incidentally of the necessity for effective recognition signals for use by day as well as by night.

Maneuvers.—Theoretical views as to battle maneuvers cannot all be corroborated by the reports of recent experiences abroad. As yet there is no complete information available regarding the methods followed in the great battle of May 31.

It would seem however that, in approaching, ships should be formed in order of battle before reaching the fighting range. A danger would be that of retaining the approach formation too long. The commander's great endeavor is to avail himself of any advantages of light, wind, weather, sea or other circumstance and he will desire to avoid all resemblance of confusion. Capital ships in line, or line of divisions, of groups of homogeneous vessels are the formations to be chosen in making the distant approach with that class of vessel, lines of bearing of leaders being normal to that of the enemy. Groups should be steadied in columns before the enemy's fire has become effective, and it may not be improbable that all groups of capital ships may finally adjust themselves into perhaps an irregular single column as at Tsushima.

The approach should be continued, until fire has become effective, by slight simultaneous changes of course on the part of the division leaders each followed by the vessels of his division. Each group keeps the bearings of its opponents as nearly as possible at right angles to its own line of bearing.

The actual distance at which to open fire is dependent upon the condition of the atmosphere, the state of the weather and the accuracy of the shooting, range keeping and spotting. It is a mere waste of ammunition to fire at ranges where there can be no reliance upon making hits, but it has been shown to be entirely feasible to use the armament effectively beyond the distances at which penetration of the opposing armor is theoretically possible. The opponent's fighting power may be materially reduced and fire superiority obtained at long range, and so tremendous is the effect of modern gunfire, that every effort must be made, from the first, to deny to the opponent the effectual use of his artillery.

Should the enemy attempt to close with undesired rapidity, his effort may be frustrated by standing away somewhat, still keeping him exposed to full broadside fire, and by using the guns accurately. Ships in line of bearing advancing toward and firing at others on the bow may be exposed to the greater danger from torpedoes. Line of bearing changes are difficult but may be useful. It is considered, however, that generally opening or closing the range should be made by lines of bearing of divisions, division leaders preserving the bearing and other ships following their leaders in column.

Great care will be necessary in maneuvering to prevent any group of ships becoming isolated, and also to escape being trapped into positions in which ships blanket the fire of others, or interpose undesirable smoke interference, or in which all divisions are not favorably placed for effective gunnery and surely able to support one another from the first moment that fire is opened.

Maneuvering will always be a requirement of battle—one can hardly expect the units and tactical groups of a great fleet to go down to defeat tamely without attempting to exercise this power to escape punishment, any more than can one look to the other side not to make the effort to improve, through maneuvers, situations which to it appear to be favorable. The slow group of capital ships must be the center about which tactical effort centers but it is futile to attempt to establish definite geometric details for the conduct of operations, simplicity must obtain. Careful drill and painstaking rehearsal at sea alone will accomplish the final indoctrination of leaders, permitting the co-ordination, on which success in battle so largely depends.

Speed.—High speed has figured prominently in the engagements of the present conflict and has introduced novel factors at which we may next glance.

Formerly speed was considered to be of the greatest importance in the events leading up to action, but it will be seen now to have other important functions. While widening vastly the theatre of operations and enhancing the value of time, tactically superiority in speed lends itself particularly to the initiative. It permits the force possessing it to compel situations and conditions which the other side must meet and it supplies a means for perhaps controlling or imposing the " rate of change of range," a supreme detail in long range gunnery.

Sight Bar Range.—It is well understood that the ability to obtain correctly and to keep the sight bar range is by far the most important factor in fire control. The advantage enjoyed by a vessel that can and does obtain and keep the range within an error of 50 yards over one unable to secure the range within 150 or 200 yards would be enormous.

One hears much about shooting at long range but not a great deal concerning the problem of hitting with changing ranges. Though, target practice demonstrates that, to make a maximum of hits, it is desirable to have as small and as constant a change of range as possible, in battle if the range or the rate of change of range are constant for you they are likewise constant for the enemy. An ability to hit while these are varying considerably confers an advantage to the force able to control the fire, under the difficult conditions imposed, which might entirely nullify all efforts of the opponent.

Correct prediction of sight setting, incident to the time of flight of the projectile, is most difficult at *long ranges* when *high speeds* are employed and courses are varied and under these circumstances this prediction is of transcendent importance. On the ability to keep the range, which permits rapid hitting, improvement in naval gunnery now essentially depends.

To indicate the progress in this particular it will be remembered that in the battle of Tsushima the range varied between 6000 and 4000 yards and the change of range never exceeded 200 yards a minute. Generally it was less than 100 yards a minute. On August 28, 1914 the *Lion* hit and sank the *Ariadne* with two salvos at a range of 5000 yards when the latter crossed her bow at high speed. In this instance a change of range of about 700 yards a minute must have been experienced. In the battle of the Falklands, fought at exceedingly high ranges, fire was checked by the British ships when the change of range became very great. We have yet to obtain reliable information on this point regarding the Battle of Jutland but, having in mind the speeds employed, a casual glance at the diagrams that have appeared indicates that it was not a parallel fight and that considerable changes of range occurred.

Great changes of range cannot be obtained realistically in target practice because of the slow speed at which only it is possible to tow the targets and the danger to which the towing ship may be exposed. Firing one or two turrets from a ship approaching or receding at a known speed from a slowly moving target is a very different proposition from keeping an enemy, moving rapidly toward or away from an adversary, under the effective broadside fire of the latter.

The great fleets already possessing fast capital ships have long worked for a solution of the most perplexing factor of the difficult problem of fire control giving to speed in battle a vastly greater importance than has heretofore been conceded to this characteristic in navies not containing large vessels capable of steaming rapidly. While final reliance in matters of fire control must be in the good judgment and eyesight of the spotter nevertheless mechanical appliances are necessary to assist the control officer when conditions favor their employment. Gunnery is constantly becoming more scientific, no means for enabling one to place and to keep impacts on the targets should be ignored and complication is not and never has been an objection provided the mechanism works and satisfactory provision has been made for a failure of the apparatus.

Protection Against Torpedoes.—Speed combined with ability to maneuver constitutes a considerable protection against gunfire and is the most effective reply to the menace of the submarine and the torpedo. This latter tactical function of speed has been clearly demonstrated during the past two years. Vessels in regions where the presence of enemy submarines may be suspected, now customarily proceed rapidly and change the course every few moments.

Range.—Though engagements at sea have opened at ranges previously unheard of during the conflict now raging, neither the damage inflicted or the percentage of hits obtained are surprising to those acquainted with the advance in the art of gunnery.

In 1912 it was reported in the British Press that German naval officers were not satisfied with the German gunnery methods and that, as a result of an experimental firing by the Posen, high spotting stations were to be established on their ships. Until that time Germany had not taken seriously the gunnery improvements introduced into the British service and the principle prevailing in the German navy seems to have been that of the fastest possible shooting consistent with accuracy at moderate ranges, 5000 to 7000 yards.

At about the time of the Orion-Thunderer trials, when the old style of individual gun laying was pitted against the "director" plan, a report appeared in British papers of certain gunnery experiments conducted by the battleship *Elsass,* and outsiders suspected then, that the Germans were probably working as diligently as the British for a solution of vexing questions regarding the collective control of gunfire at long range.

Possibly the Germans in their training before this time had the idea that, because of their proximity and position with regard to Great Britain, in the event of war with that power, they would be able to choose the battlefield and probably the weather in which they would fight. England could not rest satisfied when drilled for certain peculiar conditions and has had to be prepared to carry the offensive to an enemy in any quarter of the globe. In some respects, with long naval frontiers, reaching into the two great oceans, over which the widest range of climate and of weather extends, our position is not unlike that of England and we cannot properly carry on training exclusively in any one locality or arbitrarily adopt standard circumstances of sea and weather for our naval activities.

If Germans held rigidly to the views believed to belong to them in 1912, which seemed to lend themselves most particularly to close, sharp work, they have since demonstrated the possession of a highly scientific knowledge of the game of gunnery in all of its phases, and a clear understanding of the fact that the seaman must have a better ability than his adversary to hit rapidly, at long, short, or at quickly changing ranges. Gunnery skill, which does not ensure the severe punishment of an enemy under any circumstances of contact, however unfavorable sea or weather, is insufficient. Expertness with weapons may enable one to escape from unhappy tactical situations but unless it exists, better tactics and superiority in numbers may be equally unavailing.

Errors of Gunfire.—There has been much discussion in our service regarding the advantages and disadvantages of dispersion in gunnery. Allowing a considerable error in keeping the range, with wide dispersion the chances of making a few hits at sea would seem better than when shots are kept falling close together. With wide dispersion, however, many hits cannot be made, the precise control of gunfire becomes impossible, and nothing better than a mediocre performance is to be expected. In peace all effort should make for the most exact precision in all details, for it is evident that in battle the precision of peace can never be attained.

While concerning ourselves with important details of gunnery, that of ferreting out and reducing or eliminating the small errors which combine to make up the lack of uniformity of performance and the considerable dispersion of heavy artillery presents itself. There is no subject of greater moment to the gunner of the army or of the navy than this. In order to study it intelligently and exhaustively firing experimentally, as nearly as possible under service conditions but where results always may be measured with exactness, would seem an absolute requirement.

In the well appreciated necessity for bringing closely together the two military arms of the government, might not the establishment of a common proving ground for the long range experimental work of both the army and navy be very desirable? The economy of the government which would result therefrom and the great advantages to both services obtained through having all the work of progressive, experimental gunnery combined would certainly more than offset any disadvantages that might be claimed because of friction in the administrative details for the regulation of such an establishment.

The facilities for the study of long range ballistics at Indian Head have long been entirely inadequate. At Sandy Hook the army is somewhat better equipped than is the navy for this work but it is understood that a private plant has recently acquired a proving ground far more suitable for the study of long range fire than either of the government establishments. Such a proving ground will vastly strengthen the position of the private corporation in the field of ordnance and gunnery perhaps, in time, at the expense of the government.

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Initial Advantage.—It will be appreciated that the attainment of the initial advantage in gunnery may not be gained by all the vessels of one side, though for each individual ship, the early acquirement of this advantage is of supreme importance. A single ship leaving the formation during the early stages of battle confers upon the enemy an almost incalculable advantage and the ability of every vessel in his force to maintain position and effectively to deliver fire even though it be but a small fraction of that which the ship originally was capable is a matter of greatest concern to the commander-in-chief.

Collective Fire Control.—We may note at this point the importance of the collective control of the fire of an aggregation of ships—also a feature of battle not brought out always by peaceful target exercises.

The prevalence of mist or smoke in the theatre of operations may cause independent and unexpected encounters between groups of ships, unequal in numerical strength, of great consequence in fleet action. The likelihood of such encounters between individual ships or between groups of ships unequal in numbers, is a compelling reason for incorporating in every unit of the fleet the very strongest characteristics. This size alone permits.

In these isolated combats, as well as in an engagement between the battle lines, the collective fire control counts heavily; unless a capital ship is able to concentrate the fire of her battery with that of another or others, on an active enemy, or to divide the fire of her guns effectively if the necessity for so doing arises, her value in fleet action may be discounted. The tactical concentration of ships is valueless unless, with it, there is effective concentration of artillery.

Night Action.—The Battle of Jutland has given further illustration of the disinclination to join capital ships in night action, when the uncertainties and confusion of conflict may be so vastly augmented.

It should not be assumed however that battle between large units cannot be conducted after sunset. In war darkness has generally conferred an advantage most particularly to the better disciplined force determined to impose the initiative. A few vessels well grouped and handled might after nightfall throw disorder into a numerous collection of ships and a fleet much inferior in the numbers of capital units may seek to compel surprise action at night, if it is within its power to do so, and the activities of the enemy torpedo craft do not prevent it, rather than to accept battle in daylight.

The side forcing the attack at night, being able, to some degree, to time and plan the encounter, might enjoy a great initial advantage in the use of both guns and torpedoes.

Torpedo Attack.—The problem of night torpedo attack and defence remains among the most involved confronting the seaman. At night or when visibility is poor the destroyer attack must be driven in to a very close range.

On the part of the destroyer the factors of keeping the torpedo prepared and adjusted to run for long periods; having it instantly ready for employment when the fleeting opportunity for using it occurs; the uncertainty of search for the enemy in darkness, possibly in bad weather; then the attainment, perhaps at high speed, of the proper position for discharging the weapons, despite the disconcerting influences of exploding shell, possibly of confusing searchlight beams; and, at the proper instant, of launching the projectile accurately directed are all to be taken into account. From the viewpoint of the battleship we know that it is difficult to see and promptly to hit the torpedo vessel but it is perfectly understood that the difficulties are not all confined to one side.

A high degree of specialization would seem necessary for the personnel of the torpedo fleet. Service in destroyers is most instructive for developing initiative, self-reliance and skill in seamanship. Perhaps it is the best school to-day for the young sailor, but the effort to broaden the education of the naval officer must not shorten the experience of those serving in these vessels neither should it militate against the formation of corps of efficient specialists having taste and talent for the arduous duties required of them, not only in the destroyer, but also in the submarine and in the airship.

Searchlights.—It would seem that there may be occasions when it would be very improper for a capital ship to show a light which might attract searching torpedo craft from great distances. To hit efficiently, however the target must be clearly seen and when one vessel or a small number of ships are actually assailed and their positions are definitely known, illumination by searchlights, necessary to permit accurate shooting with the guns, may become advantageous.

The beams of searchlights thrown on an attacking vessel greatly embarrass her. Though lights indicate the target for the torpedo craft they make the estimation of the range on the part of the latter difficult, and cause confusing shadows and silhouettes. A ship will not wish to employ many searchlights but must have several available which may be used positively and effectively when circumstances make illumination necessary. The use of searchlights has been referred to frequently by those reporting events of the night of May 31.

It appears to have become a part of the duty of scout cruisers, in covering destroyer attack, to illuminate the torpedo target with searchlights, in order to distract attention from the torpedo craft which they are supporting, and to draw the fire of the enemy.

Torpedo Defence System.—An essential for the torpedo defence system of a battleship is effective flexibility adaptable to any conditions of service. If the capital ship has been under gunfire during daylight a highly centralized, permanent and elaborate system with the use of which perfection has been attained in target practice may utterly fail because of a very trifling damage. Present effort is to have each of the night torpedo defence stations self-contained and independently effective. When the collective control of the secondary weapons becomes impossible, the passing to group and then to individual control should be a prompt possibility.

For torpedo defence volume of accurate, well controlled, very rapid fire is essential in order to hit the swiftly moving torpedo vessel. Interferences in pointing incident to the firing of several guns close together are particularly trying at night making the fire delivery slow and erratic and the control difficult. To gain volume, and at the same time to minimize interferences would seem to be strong arguments for the multiple mounting of torpedo defence guns, *i. e.*, the mounting of two or three guns in a way permitting all to be laid and fired by one set of pointers.

The director system may be applied to groups of the secondary armament but it would seem probable that the installation of guns in multiple might better overcome the disadvantages incident to the independent laying of many pieces and retain the extreme handiness requisite for purposes of torpedo defence. The mechanical difficulties incident to preserving the ability to work the pieces rapidly and conveniently, while considerable, should not be insurmountable.

Torpedoes.—During the Japanese-Russian war it has been estimated that the Japanese destroyers fired about 370 torpedoes, making 17 hits, about 4 per cent. Eight of the hits were on ships at anchor. The torpedo in 1904-05 was far from being the weapon of to-day and possibly it was then not used with great skill. Statements have appeared from time to time, regarding the employment of torpedoes and numerous torpedo hits on various types of vessels have been claimed and acknowledged by both Germany and Great Britain but we have nothing definite as yet, on which to base positive conclusions regarding the present effectiveness of these self-contained projectiles. It is probable that, when exact information becomes available, it will be found that they have inflicted considerably more damage on both sides than has been reported.

The surface torpedo vessel is a most serious menace to the safety of large ships after nightfall but the long range torpedo has given to the destroyer now conveying it, a primary rôle in day action long since well recognized as having a decided moral if not material influence upon the tactics and the gunnery of the battleship. The above water tube of the destroyer is the least complicated and the most precise mechanism for the discharge of the torpedo under service conditions. Nothing has been published as yet regarding the use of torpedoes by large vessels during the present war but it is believed that the difficulty of directing accurately and of firing torpedoes from submerged tubes installed in vessels moving at high speeds has not yet been solved in a manner sufficiently satisfactory to warrant the sacrifice of the great space and displacement necessary for the establishment of many submerged tubes in a capital ship.

To permit prediction in directing the torpedo, particularly necessary because of its long "time of flight," and to enable the leader of a group of capital ships to avoid dangerous torpedo water the continuous plotting or tracking of the enemy is necessary. This is a strong argument for the development of an efficient mechanical tracker if it can be obtained.

Mines.—A prominent British writer some years ago ventured the prophesy that "the future successful naval tactician will not be one who places his fleet in the most advantageous position for gunfire, but the one who can force his opponent over a skillfully mined area." Though this prediction has not yet been fulfilled in the present conflict it has not been because of the neglect of the mine, fully recognized as a tactical weapon.

It will be remembered that in the battle of August 10, 1904, the Japanese destroyers, when seen by the Russians to drop what appeared to be mines in their path caused the capital ships of the latter to make a wide change of course while under gunfire. These supposed mines were really coal bags or baskets. As an example of more recent employment of the floating mine the press report is of interest that, in the raid of November 3, 1914, the rear one of the German cruisers threw over mines, one of which was struck by the British submarine (*D*-5), then running awash.

The shoal waters extending for great distances off our own coasts are well adapted for mining, now perhaps the commonest activity of naval war and the organization, in peace, of a sufficient mining service would seem an important part of preparedness. The work of mining sea areas generally, must be under naval control in war; should not serious effort be made toward bringing under a centralized management, the activities which already exist, the supplying of suitable materials, and the training requisite for mining and for mine sweeping on a broad scale? Here would appear to be a wonderful opportunity for co-ordination.

Submarines.—Though its greatest successes perhaps have not been in the attack of war vessels, the German *U*-boat has shown again that the strongest military characteristic that can be given to a vessel, designed primarily to keep the enemy away from the home coasts is sea endurance.

Small radius of action and inefficient weatherly qualities made brief the existence of the gunboats of former days, also the "coast defence" battleships and the torpedo-boats, of recent years, designed solely for the so-called purposes of "coast defence," yet we see now the submarine destined to go through the same cycle of development as that through which has passed the other units finding places to-day in fleet action. It must appear logical that effort should make for the development of the submarine of larger size, better speed and a wider radius of action.

The press has frequently mentioned anti-submarine methods, devices, and the types of craft adapted as patrols for submarine defence purposes, but precise information is not yet available regarding these. Sufficient is at hand, however, to indicate the importance which these details have in naval affairs. Here again is great opportunity for the co-ordination of numerous and, in peace, conflicting interests.

Aircraft.—The great speed and mobility of naval units together with the many types and the numbers included in modern fleets extend the field of battle over immense areas. To co-ordinate the efforts of all participants accurate information to-day is of first importance.

Aircraft appear to have taken unto themselves scouting as a primary rôle. It must seem, however, that while vessels navigating the air may supplement they cannot supplant fast cruisers for the service of information. The latter possess a sea endurance and navigational reliability, together with an ability to render a maximum of service under all the various circumstances which may be encountered in war which cannot belong to a vessel navigating a widely different medium. There is a high percentage of fog and considerable bad weather prevailing during certain seasons on both our Atlantic and Pacific seaboards. Aircraft would be useless for over-sea work during the existence of either fog or bad weather.

The European air-ship has been most useful when operating from the land or in short flights from a parent ship in smooth water. It will be discovered probably that not the least important duty of the German aircraft has been to keep under close observation the regions in the neighborhood of the German fleet bases, thereby enabling war-ships to conduct battle preparations without serious interruption incident to a close confinement to home ports where discipline and training both suffer severely. For spotting purposes at sea it is difficult to conceive of reliance on the hydroplane or dirigible at the present time, though for indirect fire, as in the case of bombardments, these together with kite balloons would be invaluable.

(The British fleet utilized an airplane to advantage on the afternoon of May 31 and if a German Zeppelin observed the British dispositions on the morning of June 1, as rumored, it may have influenced the later movements of both main bodies.)

The navy lacking an efficient air service must, as a result of its deficiency, suffer loss in the effectiveness of types armed with the weapons in which confidence is imposed for success in battle. Perhaps the greatest lesson impressed by recent events is that the presence of efficient aircraft, submarines, and of torpedoes and mines will, in the future, more than ever before, disincline the leader of a great fleet to engage another, approximately his own in strength, in the home waters of a skillful enemy where the naval commander may expect to find the stage most carefully prepared and set for the tragic drama of naval conflict.

Communications.—Second only in importance to procuring information on which to base action is the necessity for reliability and effectiveness in communicating information. There is no detail now meriting closer attention on the part of those interested in naval progress than the development of radio for ship's use.

Science, no doubt, will do much toward eliminating the difficulties incident to interference and it is reported that the practicability of a radio direction finder has already been demonstrated successfully.

The desire for improvement in materials should not however obscure the importance of having an adequate trained radio personnel. We have heard of England's hasty effort to enlarge this service at the beginning of the war. In the event of hostilities, when all requirements become far more exacting than for the ordinary routine of peace, a very considerable number of expert operators at once will become necessary, in every class of ship and at all shore stations, for the important duties of radio communications—Can they be obtained?

Casualties to Material.—There is nothing which impresses the naval mind more deeply than the recent reports regarding casualties incident to defects and deficiencies in material. The derangement of the steering gear of the *Warspite* in the Battle of Jutland is a notable instance, also the destruction of the British battle-cruisers.

* * *

Man is the most delicate mechanism on board ship. In battle men work under great stress and they may, in turn, subject their implements to the harshest treatment. How important becomes a full regard for the violent usage these may receive under such circumstances. Particularly this applies to the ordnance mechanisms of the mammouth battleships now projected in which the fighting power is concentrated in a few turrets each containing a considerable percentage of the vessel's offensive power. The possibility of a misfire, a jammed breech block, a fuzed primer, a hoist failure or other trivial but not unusual mishap should be eliminated beyond the realm of chance or a tremendous unit of the fleet may be deprived suddenly of power of offence on the supreme occasion for which the ship was created.

Water-Tight Subdivision.—Though the subject perhaps has only an indirect bearing on tactics one cannot fail to note that the importance of stability and buoyancy in ships, ensured by suitable water-tight subdivision, has been again made manifest during the present conflict. The sudden sinking of large vessels is a casualty that now excites only passing interest.

It was reported in 1904 that the loss of a Japanese battleship was due to the inability to close a water-tight door leading to a coal bunker in use at the time contact was made with a mine. Since that occasion the Japanese have devoted great attention to the closing of water-tight openings, particularly those leading to bunkers, promptly and surely. The practices of peace are opposed to the complete water-tight integrity of compartments below decks but the piercing of bulkheads is a feature of construction which must always weaken and place the water-tightness of subdivisions under suspicion. Needless to say, cutting should be minimized and where a water-tight bulkhead has been pierced, the provision for the closure of openings in emergency should be both prompt and positive.

The distortion of bulkheads adjacent to boilers, due to heat when fires are lighted, and coal lodging in door frames are common interferences with the quick closing of bunker openings, the likelihood of and the serious objections to such mishaps are not always appreciated on board older ships. The advent of the oil burner permits far better water-tight subdivision than was ever possible formerly but the arrangement of bulkheads to resist the penetrating effects of the explosion of torpedo and mine is now the most serious problem confronting the naval designer.

Battle Training.—It has been said of us by foreigners that, while we are very keen in our training for target practice, in our preparations for battle we fail. A brief glance at one or two features of our methods will be helpful in clarifying ideas on this subject.

In the ordinary exercise of peace, the tediousness of which competition does much to relieve, the natural tendency merely to beat the other fellow sometimes has a baneful influence. It is frequently overlooked that the competition is simply a means to an end, the purpose being to promote a skill which will ensure a good performance at any time and under all circumstances and not only under the conditions ordered for a particular problem of target practice.

(Study of the methods employed abroad for retaining the fighting edge, during the long months of waiting, would be of great interest to us who sometimes complain of a few days delay in the conduct of a target practice when trained to the minute for the performance.)

Where training is conducted intensively with the view of winning in a competition, economy of effort on the part of participants will often limit the scope of their endeavors.

Status of Petty Officers.—In gunnery the inclination becomes very strong to regard all details but the simple mechanical operations of loading and firing, of gun pointing and of sight setting, as belonging exclusively in the hands of officers. The usefulness of the petty officers, in whom much reliance must be confided in battle, is apt to be overlooked. This indeed is very objectionable practice.

The number of officers can never be sufficient to give one command at every gun station. To the gun captain belongs the knowledge and the ability to fight his own weapon and if he is removed then another member of the gun crew should possess the understanding which assures an intelligent control of the piece. In the turrets of the capital ship, where an officer generally has direct charge, this may seem a matter of less importance than at isolated stations, such as those for broadside guns, but such is not the case. The officer at the gun or at the centralized control of a battery of guns may be eliminated at any time and an important part of the peace duties of each is to prepare his men so that the portion of the ship's offensive power, under the officer's charge, may not be nullified by his absence or disablement.

In the small cruiser, the gun boat, and the destroyer particularly the centralized control of the artillery is difficult and perhaps, under some conditions of service, impossible. In these vessels, which reasonably may expect to fight at moderate or short ranges, training for individual control of the guns is of paramount importance. In *every* ship, however, the complete instruction of the crew regarding the power, limitations, range table data, etc., of their weapons is very necessary. There is nothing abstruse or incomprehensible with regard to these details. The men take an interest in their proficiency with arms greater than in any other detail of ship life and the familiarization of the ship's company with the use of weapons merits the most careful, thorough and constant regulation. (Any one who has ever been in company with a German or a Japanese war vessel for long cannot fail to have noted the unrelenting attention given to the acquirement of proficiency, individual and collective, with weapons.)

Reserve Ships.—The complications and time involved in the training of a naval unit for battle to-day are well understood. Reserve ships, without complete organization or adequate crews, are of but slight military value. They pad the navy list, however, and exhaust considerable sums from the general appropriations. It will be recalled that Cradock's vessels were old, and their defects of design were well understood, but these defects were not more responsible for the quick destruction of his ships than that certain of them had been hastily manned and sent out poorly prepared to meet an enemy well trained for the supreme test of battle.

An ancient ship of the line to the government is like an old garment to an individual—hard to part with. The time comes however when these should be discarded for economic if for no other reasons. A wise plan to follow occasionally is to utilize obsolete armored vessels for gunnery purposes as was done with the old *Texas* and has been customary abroad for years in all navies that have striven constantly to cover every phase of preparation for battle. In so far as battleships are concerned, strength of reserve lies in the national facilities and abilities existing for the rapid construction of new vessels, not in a dependence on ancient and discarded craft armed with inefficient weapons. Certain of these only may have a usefulness in war but the number employed and the useful scope of their employment always will be exceedingly limited.

Tactical Training.—A navy "for defence only" is a catchy phrase appearing frequently in the reported utterances of statesmen. Because a navy is intended for defensive purposes does not make less important the various operations through which alone training for active service can be accomplished in peace. One who would devote vast sums to the construction of new ships and yet withhold the considerable funds necessary for realism in the necessary and periodic mobilizations, the maneuvers and exercises all making for the acquirement of proficiency in the employment of ships and weapons lacks sadly in his conceptions of the stern requirements of war. The United States has never held a single war maneuver along the broad lines of those for years conducted abroad. Effort has just begun to give the commander-in-chief experience in handling the many vessels he would be called upon to use at once in the event of hostilities. All great navies except our own are having practical experience in war, what great handicaps are to be overcome in the effort to attain the proficiency now existing in those services?

Naval Power.—In closing one may again note that the most casual glance at the events of the past two years indicates clearly that the relative importance of the factors which make up naval power remains unchanged.

The description of any of the countless appliances continually being devised and extolled in the public press for the purposes of battle strongly appeals to the popular imagination. Inventive skill, however, is not monopolized by any one people and materials for war cannot be perfected and used for long only by one nation. Knowledge of them, if ever secret, soon becomes common. The war has shown that to-day the possession of a novel appliance may secure a momentary advantage but, that at sea first reliance must be had in an organization which ensures skill, forceful and determined, in the tactics and the gunnery of ships. The paramount factor of naval power remains the personnel, adequate in numbers and strong in training, discipline and morale.

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LOGISTICS: ITS INFLUENCE UPON THE CONDUCT OF WAR AND ITS BEARING UPON THE PREPARATION OF WAR PLANS

By Major H. C. Davis, U. S. M. C.

Introductory

The "pomp and circumstance of war" from the viewpoint of the layman, is apt to be confined to the dramatic and spectacular features of the actual battles, the endurance manifested in marches and the destruction accompanying bombardments. His knowledge of the conduct of war is generally confined to newspaper accounts, and these, prepared merely for the news value that they may have, give him no inkling of the vast throbbing pulse which underlies all the theatrical features of warfare.

This wide-spread system of arteries, carrying new life and strength to the fighting line, the intricate web of veins returning the waste to the home depots to be purified and again sent back to the front, form no part in the average civilian's scheme of battle. But without these channels and without the renewing process, the life of the army is sapped and its strength finally wanes just as the human body dies from inanition.

Logistics is the broad term which embraces the methods, sources and systems by which all the life-giving elements of a fighting force are supplied and maintained at the highest point of efficiency.

The multitude of these demands is little understood except by military students and, except in those treatises on war which are prepared for military students, is hardly touched upon in popular reports of past campaigns. Nations which are foresighted in the matter of military preparation, make, in time of peace, the elaborate plans which are put into action in time of war with the purpose of supplying all the demands of the army fighting for the honor and perhaps the life of the country. The general staffs of such countries have the data required by such plans tabulated in such a manner that the step from the peace to the war status is accomplished with the least dislocation of peace time conditions.

Such plans require the estimate of the entire resources of a nation and have so organized the manufactures of a nation that every military requisite which the government does not itself produce is at once available for the use of the military when the need arises. This sympathy between the civil manufacturer and the government does not exist in our country, and whether or not an organization such as this paper will endeavor to point out as the best solution of the logistic problems confronting us can be effected without such mutual comprehension is difficult to say. That it may be brought about by a clearer understanding of the needs and policy of the government which can be effected by education of the civil population to the understanding of the aims of the military service, is probable, but the time is not available for such an extensive campaign.

A logistic map of a country at war would closely resemble a cobweb. The outer edge and the supports running from it to the next line toward the center represent the advanced bases and the lines of communication to the intermediate bases. Continuing the analogy, the final center is the home country, the main base of all supply. When logistically organized, the knots or bases and the lines connecting them are under the command of trained officers, and it is their duty to see that there is no interruption of the constant flow in both directions along the lines under their care.

The rapidity with which war material is expended under modern conditions can be appreciated only by a close study of the manner in which modern warfare is conducted, and it has been stated that the expenditure of material in the war in Europe has been greater even than the estimates of the German Great General Staff. This may be accepted as a gauge of the great expenditure, for, if a staff so renowned for the accuracy of its estimates does underestimate, it may be assured that the depletion of the stock on hand has been exceedingly rapid.

Under the German or Prussian system of communications the area in rear of a field army or army corps is divided into three parts. There is the area of the fighting line, the area of the intermediate bases and the area of the home country. These areas are superintended by an officer known as the inspector of communications, and for the correct despatch and proper arrival at their destination this officer and his staff are held strictly responsible.

The intermediate bases form store points for the area in their front and excess supplies for the immediate demands of the troops in this area are kept there. Material going out to the front from the intermediate base is at once replaced from the home base for the area in question, and with the systematic grasp which the Etappen service has of the situation it has been demonstrated that supplies are very rarely lacking or go astray.

From the rail-head material is forwarded to the actual front by every possible means; motors, horse vehicles, canal boats, etc. Around the intermediate bases which generally lie just back of the frontier or, if in enemy territory, embrace a district on both sides of the frontier, the country is called on to provide a certain amount of whatever article is most abundant and easily procurable in that district for the use of the army unit or units in the actual front, supplied from that intermediate base. This area advances with the troops and retires with them, the object being to make the country support the troops as far as possible.

The system closely approaches a tree in appearance; the trunk is the main roads to the home country, the large branches are the roads from the main lines to the intermediate bases and the smaller branches are the trails, canals, motor roads, etc., connecting the intermediate bases with the advanced bases and the actual front.

On the staff of the officer in command of the lines of each area there is:

1. A base commandant.
2. A medical officer.
3. An engineer officer.
4. A quartermaster.
5. An ordnance officer.
6. A signal officer.
7. An officer of railroad troops.
8. An officer of the commissary.
9. A provost marshal.
10. A postmaster.
11. A veterinary.

It is the duty of these officers to see that the supplies for their respective departments are promptly and accurately forwarded to their destinations. Requisitions from the units at the front are received at the intermediate bases; they are there passed upon and then sent to the main bases where they are filled and join in the flow of material to the front.

Upon the flawless working of the lines of communication depends the health, comfort and success of the troops in the trenches. For this reason the greatest importance attaches to the security of these lines and if they are threatened with interruption by movements of the enemy, the threat must be removed or the army is forced to change positions, which may be disastrous. It was this "threatening warfare" which was so well understood and so frequently used in the interim between Frederick the Great and Napoleon. But Napoleon's novel application of tactics upset the accepted schemes of warfare and brought about a change in the methods by which ends were arrived at. His ever constant desire to come to grips with the enemy, throwing his men in with an utter disregard for life, was a new feature to the generals of the time who had achieved their negative successes by maneuvering rather than by actual contact and the resultant fire and shock action. Napoleon's tactics had as their principal objective the annihilation of the enemy forces, and he never considered evacuating a position because his enemy appeared to have a superior one, or because his enemy threatened his lines; he removed the threat by combat.

Forces acting at great distances from the home country are supplied over lines which become longer and longer as the army advances and with this prolongation of the lines there is introduced an element of weakness, for the more the ties are stretched the easier it becomes to break them. The length of Napoleon's lines in the Russian defeat is almost the surest single item which contributed to that defeat. His establishment of bases in a lately conquered and, at heart, hostile country also increased the chances of defeat, for he did not have a truly loyal force to leave behind him to guard these bases and lines.

Yet, while we take this rapid glance at the defeat of Napoleon caused by the length of his lines of supply, we must also look at the other side of the page and see Hannibal operating in Italy against Rome for more than 12 years with practically no communication with his government. They even failed to send him the reinforcements he asked for and badly needed. Of course, the ultimate fate of his force was defeat, but the fate of Rome hung by a very slender thread more than once in that memorable campaign.

Modern warfare, owing to the rapidity with which diplomatic correspondence may be transmitted, will not be a matter of the long, drawn-out negotiations of the past. War will come in a very short space of time, and it therefore behooves the nation to be prepared. Every preparation which is lacking is an advantage to the enemy which he will at once seize, and the disorganization of unpreparedness will be augmented by the successful blows which a well-prepared enemy will deliver at the outset of a campaign.

We have only to look at the war in Europe to learn the lesson of preparedness. With the French and Russian armies in the same state of readiness as the German, the Central Powers would have been crushed at the outset of war if they had been so rash as to enter at all. But they (the Germans) were ready and the others were not, and the machine-like precision with which Germany has advanced continuously into enemy territory while her own soil is free from foreign troops except prisoners, is a lesson we Americans should hold ever before the eyes of the rising generation.

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In discussing the influence of logistics on the conduct of war, it seems important to me to consider rather the bearing it has on the preparation of war plans first, for it is on the accuracy and skill with which these plans are drawn that the result of war will depend.

My conception of the logistic problem which confronts us is very wide-reaching. To me it involves the entire resources and productive powers of the country. The complete sympathy and coordination of the civil and military forces of the country are necessary before any efficient cooperation between them can take place. In the army we have the General Staff charged with the preparation of war plans, and it is known that that body of officers has acquired and tabulated much of the information which is necessary before efficient war plans can be drafted. But the collection of information is only a small part of the work connected with the logistic preparation of the country for defence. It is a beginning and it is something which we might well wish the navy could provide, the General Staff, for just such work.

Under the caption of " Industrial Preparedness " and similar titles we have lately seen articles in the press of the country which are steps in the right direction, but the use of the expression " Industrial Preparedness " indicates to me logistics, for it is the true basis of logistics to so prepare the resources of the country that the military services may take advantage of their output when war has become our portion.

If we consider the matter of the railroads as being the first one for organization for war purposes, we are confronted with the fact that there is not a single railroad in the United States which was built for strategical purposes. That many of them can be used for such purposes is true, but the foresight which laid them down extended only to the new fields of produce and the freight which would accrue to the road when completed. Our geographical isolation has made it unnecessary for us to consider strategy in connection with our railroads and the abundance of roads in the eastern parts of the country will provide the means of strategical concentration when needed, but I mention this point merely to bring out the fact that our business has never had any interest in the possible future when it may have to be entirely diverted into military channels to assure its continued existence.

The same lack of interest in the military services is apparent in all the other branches of industry except those which are of a military character; yet it is by the close association of the resources of the country with the welfare of the armies in the field that Germany has been able to maintain the war, even while theoretically cut off from outside supplies.

England did not consider it necessary to have a munitions minister as a member of her cabinet until war and the failure of the ordinary sources of supply to meet the demands pointed out to her the necessity for the creation of such an office. It reflects no credit on England that her manufacturing resources were not in a position to meet the requirements of the comparatively small force she sent to the continent in this war.

Such a condition, however, points out for us a lesson we should not disregard. It points out to us the necessity for ante-bellum cooperation between the civil and the military so that the two may combine at the call to arms with the least dislocation of peace conditions.

We know that there are certain stores which the nation will have to provide in the open market at the outset of a war; we know that there are among these things articles which will be immediately available, that there are others which will take from two weeks to one month to provide, and that there is still another class which will take periods longer than one month to procure. Logistic plans should embrace a knowledge of these and of the system by which stores of them could be provided and placed, awaiting the call and saving the period of time above-mentioned which at the outset of a war are of vital importance.

There is an approximate estimate of the number of men we would have immediately available for defence and the plans for the full supply if these troops are drawn, but the expansion of this force into one in keeping with the needs of the nation in a modern war will throw inexperienced men into positions which they cannot fill, with the resultant disorganization and discord. If, however, the producers of the country can be made to take an interest in the military services and can organize a part of their forces to look after the providing of the article they produce and its shipment to the base where it is to go, much of the confusion can be prevented and the smooth working of the logistic machinery enhanced.

For instance, it is now known that in the spirit of patriotism which will always pervade the best men in any industry, the leaders of men in the great ammunition works of England enlisted at the first call. These men went to the front and many of them were killed, but before it was too late the English realized that these men could not be replaced in the factories, they realized that without munitions the troops were useless, and by an arrangement with the government these men have been brought back from the front and put at their old jobs because they could do better work there than at the front, where less skilled labor could perform the work. Complete logistic plans would have foreseen that these men could do more necessary work at home and would have kept them there. We could make a canvass of all the factories in the country which employ these skilled artisans and we could find out their intentions in case of war and prevent the factory being crippled by not allowing these men to enlist. Truly, " they also serve who only stand and wait."

The matter of supervision of enlistments or, let us say, government control of enlistments is a very vital matter. England whose military system most closely approaches our own has had to come to conscription. We have had to introduce conscription in every war we have ever had and we certainly will have to repeat it in the future. Keeping the men necessary on the firing line has never been accomplished by leaving it to the volition of the individual as to whether or not he will go. That the citizen owes his country his services in return for its protection is very true, but there has been so little demonstration of the protection of the citizen by the government in late years that the citizen has forgotten his obligation to the government.

The conduct of war, however, depends on the supply of men and if that supply is not forthcoming when needed, the war is doomed to failure at its inception. No matter what the politicians may tell the people to the contrary, the American citizen from the birth of this republic down to the present time has not proved himself to be that patriotically inspired hero which the common histories of the country would have us believe. Rather he has taken every means to avoid going to the front, and we have in the War of the Revolution the inspiring example of the citizens of Massachusetts hiring the deserters from the British General Burgoyne's army to take their places when they were drafted by the conscription which had to be enforced. We are face to face with the high-minded and patriotic people of Rhode Island freeing whole batches of slaves to make up the quota which their masters should have filled in the same war. In the War of 1812-14 there is the famous case of the governor of Vermont trying to induce his entire contingent to leave the colors, and in the War of the Rebellion the riots in New York City over the conscription are blots on the escutcheon of our loudly heralded but decidedly negative patriotism!

Therefore, the most important matter for the government to settle in time of peace is the supply of men to the firing line. Voluntary enlistment has proven itself a failure both in our history and in the present history of England. Conscription, if the people are made to see that it includes all men of the country who are able-bodied, is the rendition of the service which the citizen owes to his government and is the only practical and assured solution of the problem of the supply of men for the armies in the fields.

The transportation of the materials needed by armies is the next step to be considered. The railroads have been mentioned, but only *en passant;* they are the real arteries and veins which assure the arrival of the men and the material at the fronts. Their perfection has ever been a matter of national pride with us, but they are not constructed for strategical purposes and they are not subsidized by the government with the view of the government taking the right of way over all classes of traffic during times of war. Some such arrangement should be made. The business of the government in time of war should take precedence. During our Civil War there were employed by the railroad division of the army more than 17,000 men in one campaign, and during the war this part of the logistic plans employed more than 34,000 men. This branch operated over 2000 miles of track, built more than 26 miles of bridges, used more than 400 locomotives, over 6000 cars, and spent $42,462,145, and yet to-day it is hardly known that the government had to take in hand the operation of its own railroads in order to be assured that its plans would be carried out as the military authorities desired them to be.

However, the matter of transportation of both troops and material by the railroads is merely the beginning of the problem of transportation. In this country the number of roads suitable for the continued heavy traffic of war is indeed limited. There are roads which would not stand up under the strain of even a division passing, and there are too many others which would not even permit the passage of troops and their trains at all, so dreadful is the condition. The country appears to have completely ignored the question of honestly constructed *national* highways. Traffic, business, civilization, and the arts of man have ever followed the courses by which countries have been opened to trade and intercourse. Rivers have in new countries formed these methods of intercommunication, but our development and our advance into new territories have never been characterized by the immediate improvement of the roads and highways lying away from the railroads. Thus we will be confronted in the next war by the very serious problem of moving the stores for an army from rail-head to the front by roads. The traffic of the heavy, springless army wagons will require solid foundations for the roads to stand the strain, and in this feature we are lacking. It would therefore be a step in the right direction if the military and the civil could cooperate on this very important question and we could be provided with a system of good military roads.

The matter of this post-rail-head transportation will be handled by the motor vehicles, pack trains, field wagons, and very likely every conceivable form of wheeled transportation. It would be well therefore to have complete lists of the wagons in all parts of the country in the hands of the General Staff and the capacity of the wagon factor also in tabulated form. As has been proposed by an individual, the organization of a unit or company from each one of the large motor factories to handle the machines of that factory would greatly help in the simplification of this problem. By looking ahead and preventing the men who will be necessary for home work and work which is no less important because it is home work, we can avoid the mistake made by the English in allowing the best foremen of her ammunition and other war material factories to enlist and then not being able to replace them, and thus forcing the government to make an arrangement by which these valuable and unreplaceable men were allowed to return from the front to take their places in the factories. It is all foresight, and we can learn so much from the Germans that we had better model such steps as we take on their system.

The matter of the next importance in the organization of the country for war is the accumulation of vast stores of ammunition for the men we hope to be able to get. The German Great General Staff has found the expenditure of ammunition in this war to be greatly in excess of any other in history and the quantities needed are so stupendous that one is forced to pause and wonder how men can live with the constant hail of steel which is falling in all the present fronts. For the government to undertake to build its own factories in sufficient quantities to make the needed ammunition will cause an outlay of more than $400,000,000 and require more than 750,000 men! (Chief of Ordnance before House Committee.)

But we have neither the time nor the inclination to spend such sums and use such vast numbers of men. However, the capacity of the various plants in existence can be diverted into the storehouses of the government and a complete knowledge of the capacity of these factories can be obtained. I have not been able to ascertain whether or not such a list is in existence, but it seems to be a very important thing and the general staff of the army and the logistical forces of the navy should take the matter up at once. Coordination between the private concern and the government is required and the full capacity of all the plants in the country should be so regulated that the government could at any time divert the stream of munitions into its own stores.

That the seizure of the plant of a munition company in time of war by the government in the exercise of its right of eminent domain would cause legal trouble and a possible interference with the output of such a factory is beyond doubt, and it seems that in the preparation of war plans, in so far as the logistic requirements are concerned, some warning or some arrangement should be arrived at by which the owners of the plant would have to expect such seizure and be prepared to continue the working of the plant without any interruption.

Nor is it only the munition plants which should be included in this category. Every great factory to which the government may have recourse in time of war should be so organized that government supervision could be extended to it without any dislocation of the trade conditions except in so far as they diverted the supply of the factory from the markets of the civil world into the stores of the military.

It is hardly to be expected that the question of the food supply to the troops will be the subject of such investigation and such condemnation as was accorded the matter in the last war we engaged in, the Spanish-American War, but unless there is some intelligent coordination between the producers and the consumers, in such case the army and navy, then we are sure to have our nostrils again offended with the smell of embalmed beef. The basis of patriotism is not so secure in the packing trust that they will assure the exclusion of poor material from the food tins sent to the troops. Every war we have had has been the means of unscrupulous contractors amassing fortunes based on the poor quality of the material for which they received first-class and war-time prices. Only rigid inspection on the part of the government will prevent this evil again occurring, and it is again apparent that we must keep past lessons before us and learn from them how to avoid the errors we have committed.

In summing up, therefore, the influence of logistics on the conduct of war we see that the logistic plans must provide for the uninterrupted supply of all the materials at the points which strategy indicates as the vital and important centers from which campaigns are to be conducted. These plans go deeper into the matter than the application of the questions of transport and safeguard along the lines of communication by the military authorities, they involve the business-military organization of the entire country, its people and resources, so that the object of the military, the efficient conduct of the war, may best be consummated.

* * *

Preparation of war plans in time of peace is obviously a great and far-reaching problem. Not only does it involve the strategy of the nation, the policy of the nation, the finances of the nation, and the patriotism of the nation, but it goes even further and includes the psychology of the race composing the nation. It breeds in time of peace a deep and lasting respect for and love of the country. It instills into the hearts of the people a real meaning to the famous words, " My country, may she always be right, but right or wrong, my country."

In fertilizing this germ, which sooner or later develops to an extent which I somewhat question as having real meaning for the mass of the people, it becomes the duty of those in authority to point out to the people the errors they have committed as a nation in the past.

The dogma of the seeker after petty popularity of the invincibility of the American citizen is a correct principle based on a fallacious hypothesis. We should indeed instill into the people a sense of their security based on their own efforts, but we should constantly and with all the power at our command demonstrate to them that they can only be safe by training themselves in the arts of the military profession. Empty words of the valor of the American citizen are so very injurious and create such a wrong impression that they do incalculable harm to the ignorant population. The source of any republic's strength lies in the citizens of that republic. But those citizens must be made to realize that the soldier of to-day is a product of long effort on the part not only of the officer instructing him, but of his willingness to learn from those qualified to teach him.

We are correct in making an effort to raise the morale of the people by teaching them that they cannot be defeated, but we must be careful to show them that it rests entirely with themselves as to whether or not they will give their time for the learning of the things they are so ignorant of in military matters. For without this training the entire fabric falls, and the American citizen through all his national history has strikingly demonstrated his unfitness to meet, and his ease of defeat by, veteran trained soldiers of all the nations with which he has come into contact.

Thus in the preparation of war plans it is encumbent on the plan-making body to be fully cognizant of the attitude of the people to the probable wars. Are they in favor of war? Will they offer themselves in sufficient numbers to provide the armies needed for the prosecution of the war? Generally, in this country public opinion becomes hysterical in war time or on the approach of war clouds on the horizon. Hysterical statements are made by the people, which they have no intention of living up to, and when the first enthusiasm of war time excitement has passed the people who were loudest in their cries of what they would do for the government are difficult to locate in the forefront of the enlistment bureaus.

Then it is apparent that to insure a constant and, if necessary, increasing flow of men to the front, it is necessary that the government have entire control of the matter and that it be taken out of the hands of the individual. Voluntary enlistment has never been successful in this country, and in the present war in Europe it has been demonstrated that the English, the only people employing that system, have not only again proved the fallacy of the system, but they have had to do exactly as we have had to do in our foreign wars, adopt conscription, which is a sure method of getting the required number of men.

Stress is placed at this point on the matter of the individual's attitude to the war because the supply of men is the most important matter in the preparation of war plans, and no logistic plan can be efficient if it is based on a variable factor such as the voluntary enlistment of the men of this country. Therefore, the solution of the first problem connected with the logistic plans of war, the supply of men, lies in the adoption of universal conscription, for only in that way can the supply equal the demand.

Whether or not the General Staff of the army or the General Board of the navy have the statistics on which to base plans for the war taken from the statistics of the resources of the country is not known. It is known that the General Staff of the army has made some strides in this line, and that they have skeleton plans covering the matter of mobilization, supply and transport of material and men, but their plans, in so far as I am able to learn, are based on the efforts of the military to solve the problem by themselves without the aid of the civil forces of the country. In other words, there seems to be lacking the idea of cooperation between the military and the civil. Under our system of government, which has improperly made the citizen feel himself entitled to all the benefits of government without any obligation to render service in return for them, the great civil forces have come to consider the government a thing of unending revenue, to be plucked at will and to be robbed as constantly as can be done without getting caught. Therefore the "interests" have no other comprehension of the government than a thing to be used as they desire, and only to their best interests.

The government is so loosely combined that it means not a strong body politic, but a hazy mass whose laws are made only to be avoided and whose dictums are to be set aside by processes of law if they do not please the individuals affected.

It is the duty of the military and the increasing mass of the citizens who are becoming interested in matters of military importance, to educate the people of the country and particularly the great corporations to the fact that their continued prosperity depends on the efficiency of the navy and the army.

When the man in the street is made to feel that his full dinner-pail is dependent on the power of the navy and the army to protect him and his home and his job, then there may be some more efficient cooperation between the armed forces and the civilian population. When the voter of this country is made to realize that his personal prosperity is dependent on the safety which the government can guarantee to him in the continuation of our present national life and the development of the vast resources in which his individual well-being has its origin, when he is made to clearly see that an efficient army of adequate proportions to meet any demand made on it is the means of preserving these benefits for him and his heirs, when he is sure that a navy, as powerful and well organized and disciplined as any in the world, is the foundation of his national happiness and accord, then, and only then, will there be that continued and efficient cooperation between the civil population and the controlling authorities of the armed forces which is required for the preparation of efficient logistic plans; and that mutual comprehension will bind the nation with the cords of correlative effort, producing in time of war the consummation of the ideal condition of logistic preparation, a united nation striving for the victory of its arms.

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MODERN MANAGEMENT APPLIED TO NAVY YARDS

By Naval Constructor F. G. Coburn, U. S. Navy

The attention of the country having been given recently to the preparedness propaganda, we are now in a fair way to receive large increases in number of ships, men, and officers, and in quantities of supplies, ammunition, and guns. It devolves upon the navy to maintain its new plant, to train and organize the new personnel, and to make scientific preparation for the use of the combination of plant and men. It is the purpose of this paper to point out the large work of making ready our navy yards for their work, describing by way of illustration, what was done at one navy yard, a few years ago, along these lines.

The primary function of navy yards is to repair and to refit naval vessels. In time of peace this work is merely maintenance work; in time of war the function of the yards would be to convert merchantmen to naval use and to repair men-of-war damaged in action or in the extremely strenuous service of naval campaigns.

Immediately upon the outbreak of hostilities the navy yards would be crowded with conversion work and that would probably be followed by repair work of great extent. It is essential, therefore, to the best interests of the navy that at the outbreak of hostilities the yards should be at their very best from the points of view of equipment, personnel and organization. To that end no opportunity should be overlooked in peace time to develop organization and train personnel. The modern ideas of management should find enthusiastic reception and intensive application in our navy yards.

At the Philadelphia Navy Yard a campaign of reorganization was undertaken a few years ago which was carried to the point of introduction of *task work,* that is, the assignment of definite tasks to workmen based on a clear and definite knowledge of the circumstances affecting them and their work; and the introduction of a *time schedule* for the control of the work as a whole, based on the knowledge of the time required for individual tasks, and the proper sequence thereof. The development was carried far enough to demonstrate the practicability of its completion; albeit a high order of organization and high tone of equipment will be demanded.

Navy yards in general are organized with the double purpose in mind of meeting both military and industrial requirements. The industrial plant, operated as a unit separate from the military plant, is called the manufacturing department, and is divided into two divisions, the one dealing with the hulls and permanent fittings and called the hull division; the other dealing with propulsive machinery, boilers, electric equipment, etc., and called the machinery division. The work to be recorded here was done in the hull division of that yard.

As organized at that time the work of supervising repairs was divided as nearly equally as practicable among the officers serving in the hull division, each officer looking out for the repairs to a certain group of ships. Each officer was required to attend to the correspondence, preparation of plans, and estimates, for the work on his ships, and to supervise the actual work of repairs, both in the shops and aboard the ship. Such an organization proved troublesome because, as is quite apparent, each officer was frequently required to be in more than one place at one time. A ship on which the repairs were being wound up preliminary to sailing would require his attention in order to insure her sailing at the appointed time; coincidentally, his attention would be required in the shop in connection with work on ships due to be completed the next week, possibly; and in the office, dealing with the correspondence and plans of work which it was desired to undertake as soon as possible.

To meet these conditions a more or less functional sort of organization was developed, the work being divided into two general classes, the one having to do with the correspondence, plans, estimates, etc., being a sort of engineering department; the other having to do with the execution of the work in the shops and aboard the ships, being a sort of production department. In the production department, then, the work was divided between officers as to work in the shops and as to work on the ships, and one officer given full control of the precedence of work.

This sort of organization has given good results and is in fact, not essentially different from that found in any successful private organization doing a general engineering and field construction business. First adopted at the Mare Island Navy Yard, it has since been extended to practically all of the yards.

There are in each navy yard a number of shops or producing departments; a pattern shop, foundry, and machine shop, a forge shop, plate shop, wood-working shops, etc. Each shop or department has its own foreman and he has as many assistants as are necessary for the supervision of the work. Under the old form of organization the foreman was so loaded with duties that he was, so to speak, too busy to attend to his job. A long period was necessary to correct this condition; to develop an organization which could relieve the foreman of everything except his real job of supervising the actual execution of work.

The condition found there was that which is found in the ordinary industrial plant where the foreman is held responsible for a great many things over which he has no control. An order for work would be issued to the foreman charged with the major part and he was held responsible for the prompt and efficient execution of all parts. It was necessary, then, for him to issue "auxiliary orders," as they were called, on other foremen involved, and the system thus held the first foreman responsible for other foremen's work. A little reflection will show how involved such a system may become and how impossible it was to localize responsibility. The foreman was also expected to maintain his force at the proper size; to have an eye to the stock of materials used by his shop; to hold down the cost of work; to develop improvements in methods; to maintain plant and equipment; and to be on the look-out for possible extensions of plant and facilities.

It should be obvious that the foreman's real job in a plant of this kind is to supervise the work, seeing that all hands are constantly occupied, that the work is done properly, and that the plans for its orderly execution are carried out.

To arrange matters so that the foreman can attend to his real job means that he must be relieved of those things which he is doing, which he ought not to do. Peculiarly enough these extra things which are put upon the foreman to do, are more often things which he positively *must* do and it is usually so fixed that he can easily let his real job go; whereas of course conditions should be so arranged that the converse would be the case.

The moment one starts to relieve a foreman of extraneous responsibilities one finds a singular dearth of men capable of assuming them. Just as in the past it has been the habit to pick, for foremen, high grade mechanics because they know *how* a job should be done, so it has been the custom to pick assistants in the same way; the executive function has been overlooked. In very few cases is there found such an organization as will provide for teaching and training men to be assistants to foremen and then to be foremen themselves.

The best training for such men is the planning of work; how and with what equipment it shall be done, who shall do it, what material is needed, etc. Starting this in a small way, in a few months a considerable number of men were pretty well trained and it was possible to set up a manufacturing office of such size and ability as to provide the foremen with definite, specific orders as to what they were to do and in the course of time even to tell them when to do it. Then the foremen themselves were furnished with assistants who were capable of attending to the mechanical part of assigning work in detail to the men, with the result that the foremen found themselves relieved of all responsibilities as to material and preparation of plans, specifications, etc., and were able to devote their time to forcing the work. And moreover each shop or department was prepared to receive and execute an order and report having done so. This last is a primary requisite, to be satisfied before sending to a shop, orders which require clean-cut reports.

A certain amount of physical improvement was required among the early stages of the development and while these physical changes were in large measure alterations and extensions, yet particular attention was paid to maintenance; bringing up to date the small tool equipment, putting the machinery in first-class condition; introducing a system of belt maintenance, and making all the changes that are necessary to insure that the workmen should have at hand the proper things to do with.

A few illustrations are given here of these physical changes. Figure 1 is a photograph of a collection of photographs framed and exhibited permanently in the shipsmiths' shop. The upper row consists of four views of the shop as it was found; heavy with soot and dirt; the air full of coal gas; the floor littered with scrap

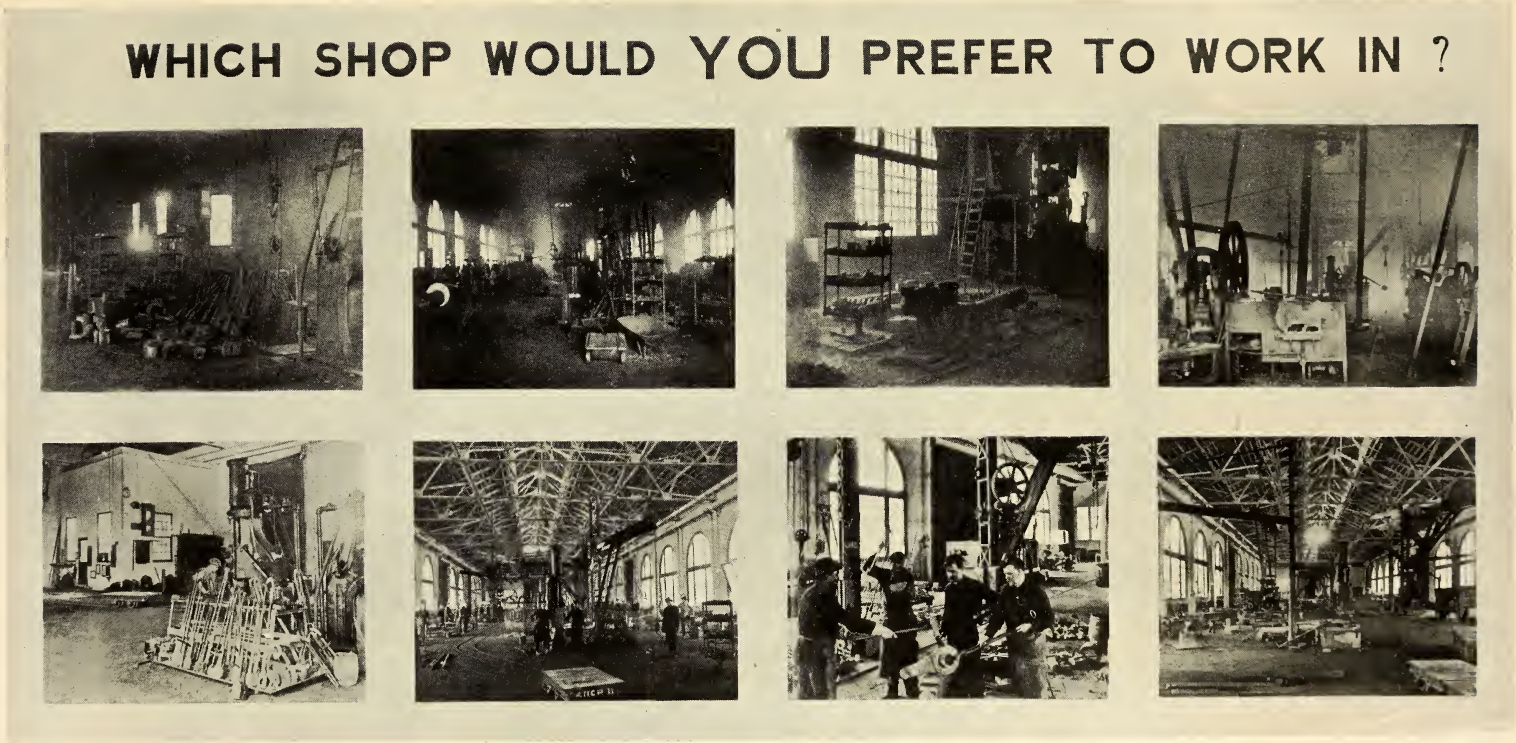


FIG. 1.—These "Before and After Taking" Photographs Were Permanently Exhibited at the Entrance to the Smith Shop, to Show Advantages of a Clean Shop, and to Encourage Cleanly and Tidy Habits

steel and tools, good and bad; furnaces run down; hammers, cranes, and furnaces poorly arranged; no transportation facilities; it was in bad shape, as such shops would be judged at present. The lower row consists of views taken from the same points, at the same time of day, almost exactly one year later; when the coal fires had been replaced by oil, the equipment rearranged, the walls and roof blown down and painted, suitable tool racks provided, transportation facilities provided, scrap stock picked up, etc. It was made into a new shop.

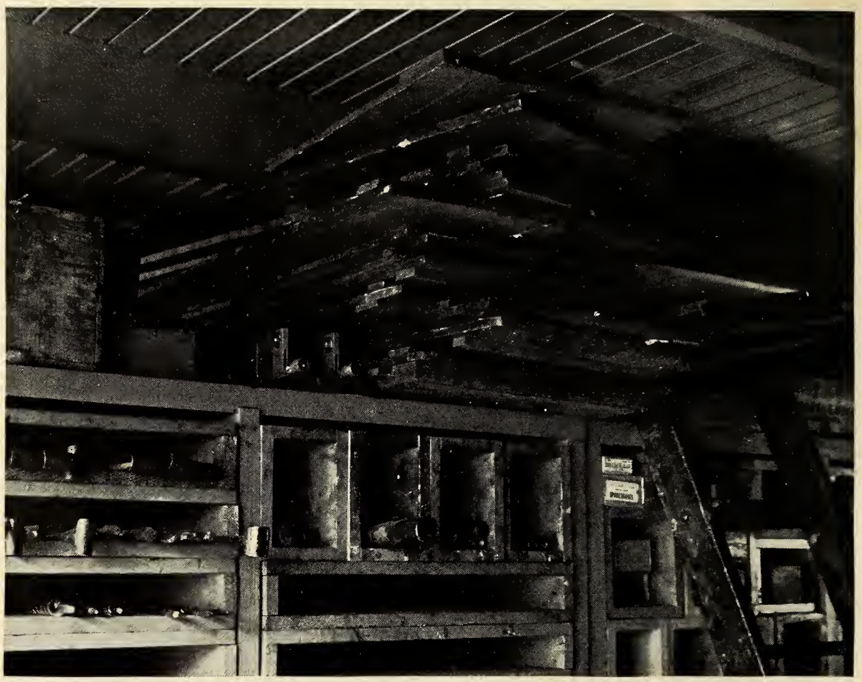


Fig. 2.—Standard Boat Plans, Inaccessible, Many Out of Date, All Were Soiled and Damaged

Figure 2 is a photograph of the boatbuilder's standard boat plans (pasted on drawing boards), and stowed on top of a tool rack. Figure 3 shows the rehabilitated plan file. Figure 4 illustrates the improved facilities furnished in the joiner shop—tables on casters, the one for the material to be worked, the other for the worked material. The latter could then be pushed to the next machine, or to the assembling bench. There were enough to equip all machines.

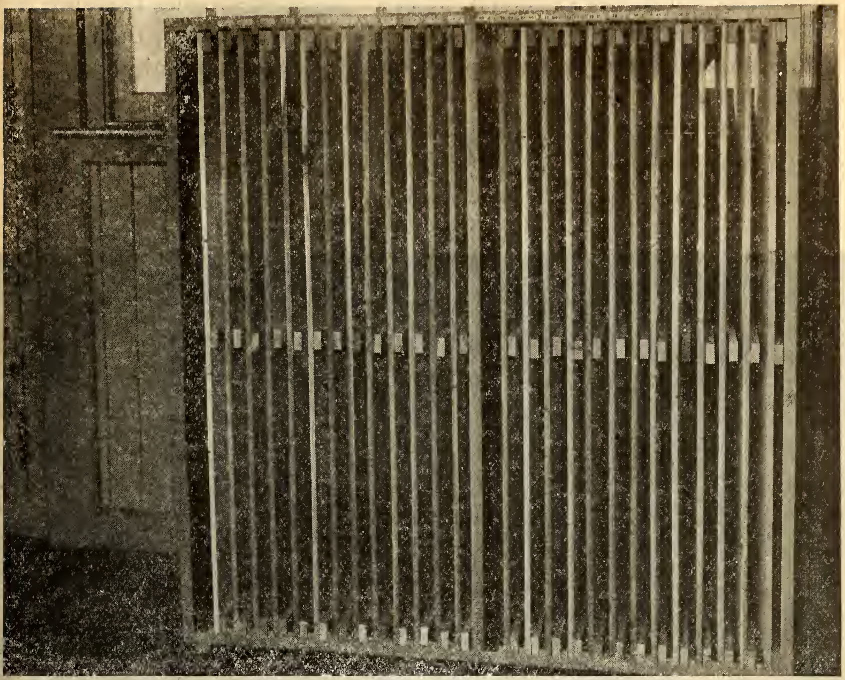
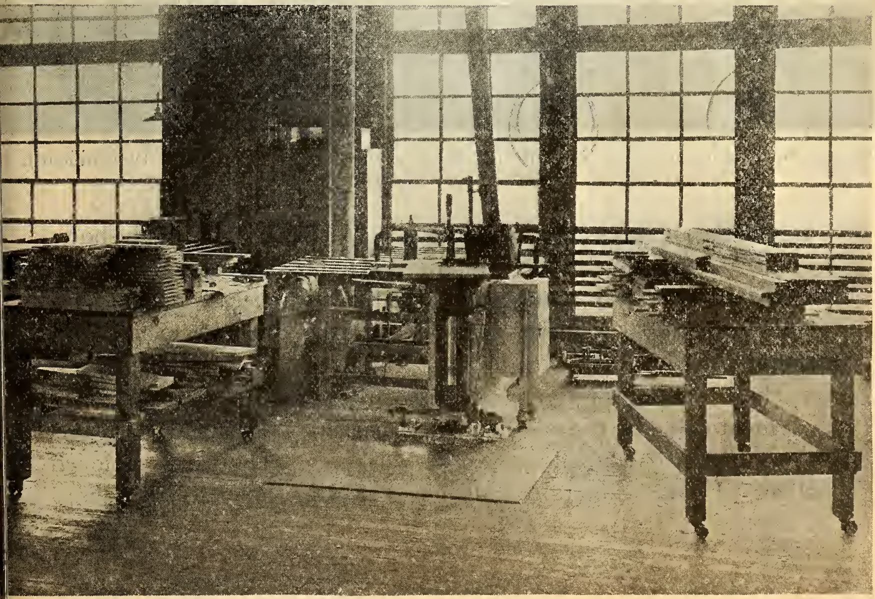


Fig. 3.—Standard Boat Plans, Accessibly Filed, Protected from Damage



4.—A Protected Variety Molder with Special Tables of Convenient Height for Supporting and Transporting Material

Note the safety devices about the machine—non-slipping linoleum for the operator to stand on, the cutter head protected, the belts housed, etc. This "safety first" work was very thoroughly done. throughout the plant.

Figure 5 illustrates another kind of betterment work. Just as in a gun-turret it is important to "have things handy," so it is in the shop. In the one place it saves time and increases hits per minute; in the other it saves time and reduces cost. This photograph shows a special bench constructed for the assembling of mess tables, with tools and hardware handy, and arranged to receive and hold the table properly. A great deal of this sort of betterment work was done.

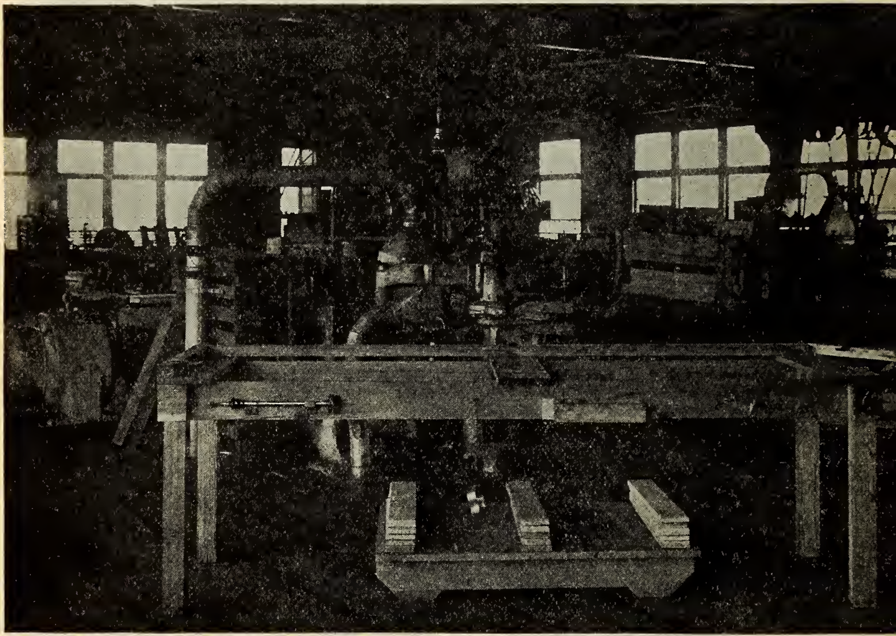


FIG. 5.—Special Bench for Assembling Mess Tables. Its Cost Was Insignificant, b
It Helped in the Reduction in Cost of Tables from $22 to $10

The foregoing preliminaries out of the way, the matter of wage payment could be considered. As a matter of fact the change was precipitated by a small number of workmen. The yard employed about 12 wood-calkers to calk wood decks. They were perhaps rather more independent than the circumstances allowed, although they did not know it. On a certain class of work these wood-calkers were averaging about 140 feet per day. From previous experience it was known that 420 feet, just three times that amount, was a reasonable day's work. But to obtain such a very large day's work a piece price would be called for and piece work was not then in vogue. At a fair price, however, an output of about 240 feet would have brought to the workman the day wages he was then receiving, and so was a reasonable day's work; therefore, the wood-calkers were advised that they must turn in 240 feet per day.

They at once objected, claiming that such a task was impossible of attainment; but it was well known that twice that amount could be well done and the wood-calkers were so informed; whereupon they decided to seek employment elsewhere. Within a month or so, piece work prices having in the meantime been established, other wood-calkers were obtained and the high output previously suggested was readily attained; 400 feet and more, to be compared with the 240 feet which, the men said, it was impossible to do. They simply did not *know*.

This matter formed a good introduction to the proposition which was shortly made to the paint-scaling gang. There were at that time at that yard three ships undergoing refit, from which all the paint, inside and out, above and below water-line, had to be removed; and all that surface to be repainted with three coats. Now this is a tremendous job and would occupy a large crew of men a long time, even working at top-notch speed. In this case time was an important feature; it always is in any plant, and is particularly so in a navy yard, where time is apt to become a military factor on brief notice.

Therefore it was determined to apply modern methods to the scaling of this old paint. Paint is removed with a chisel in a pneumatic hammer. There were different types of hammer available and different types of chisel and the preliminary work of course was to decide what was the best kind of hammer, best length and width of chisel, the angle of the cutting edge, etc. Incidentally all the pneumatic system of the yard was thoroughly gone over to eliminate leaks and thus increase the air pressure, a very important point in pneumatic machine work.

While the preliminary steps were being taken, the low quantity and poor quality of the work going on were causes of great uneasiness. The job was going very slowly indeed. The men who worked on the job were green, and they worked without much interest. Moreover it was impossible to get enough men to make the job go fast. As soon as a man became reasonably adept at the work, he would quit, as it was hard, dusty, most disagreeable work, to say nothing of the danger of lead poisoning. In these closed compartments below decks with the air hammers in operation the

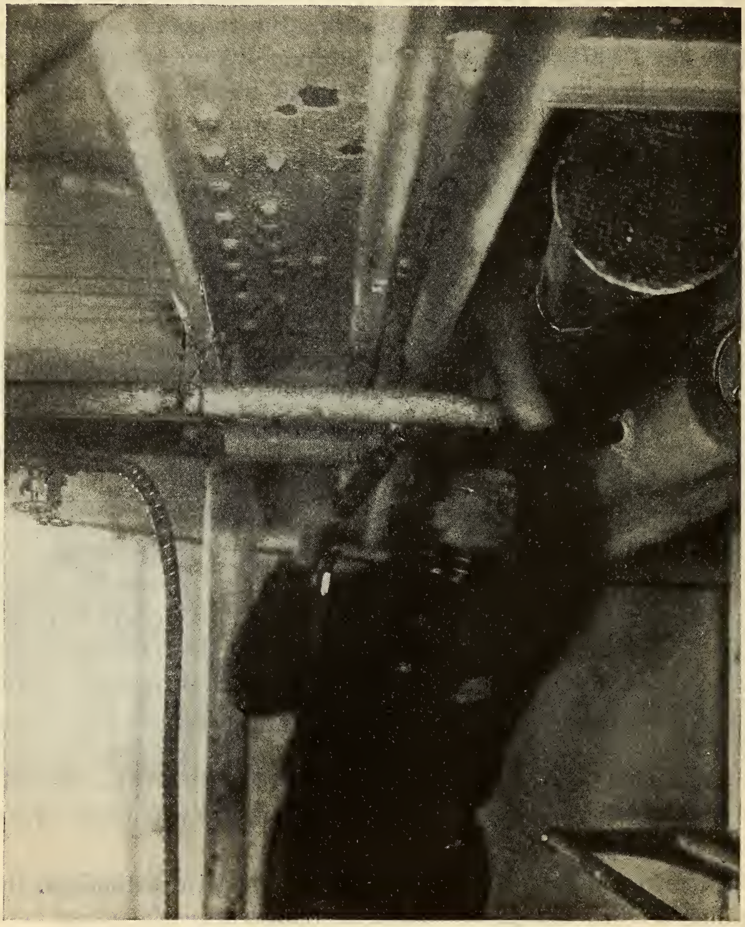


FIG. 6.—Obstructed Overhead Scaling, U. S. S. *Brooklyn*

atmosphere was charged with fine lead dust which the workmen breathed and swallowed. Then too, these workmen were of a class which did not thoroughly comprehend all the advantages of personal cleanliness, which is so essential to the health of the lead worker. The photograph, Figure 6, illustrates the working conditions, except that the dust and poor lighting facilities are not apparent.

And even if it were possible to hire enough men to make the job go forward satisfactorily with low individual efficiency, there were not enough tools to equip such a large force and it would have cost a large sum to provide such tools; and with the increase in tools would have come an increase in air consumption which the plant was not capable of meeting.

The cost of the work being done was necessarily high not only because the men were working slowly but because of the excessive cost of training new men, which had to be borne by the job.

In short, to have done the work with men working at low individual efficiency would have taken too much time and also would have entailed an extraordinary overhead expense.

A way was found of offering a bonus of 24 cents per diem to the workmen who were scaling these interior compartments. This bonus amounted to more than 10 per cent of the men's regular daily wage and seemed fairly attractive. A task was therefore set after careful time study; the observer being a trained time study man, the workmen studied being in the "good average" class. After the task had been set, the men found by trial that it was not difficult to meet the task and started to increase their output. Incidentally, in spite of the preliminary preparations there was trouble due to lack of air pressure, deficiency in number of chisels, poor condition of hammers, brought to the surface at once by the pressing requirements of the bonus workers. This was expected; it always occurs in the development of shop management, just as the deficiencies of our ordnance material were brought to light when competitive target practice under standardized conditions was introduced in the navy. Day workers do not care, if conditions are not right; but the task worker knows that he *must* have them right.

So the men proceeded making their task; no difficulty whatever was had in getting a sufficient number of men and there were ample tools to insure that the work went forward rapidly. But the men soon struck a gait, turning in each day just enough to meet the task requirements and earn their fixed bonus, so that an opportunity was looked for to get to a complete adoption of the task-work-with-bonus plan of payment, in order to get a larger production—to get from each man the full measure of his ability.

The method of payment described above was a task-work-with-bonus system in that a definite task was specified and a bonus offered for its accomplishment; but this bonus was a fixed bonus and no incentive was offered the workmen to do more than the specified task. Of course if all workmen were alike then the task could be specified of such character that the men could barely attain it and the offer of a fixed bonus would suffice; but all men are not alike, and a task which would be barely attainable by the best man would be totally beyond the reach even of the average man; and in the long run, methods of handling men must be based on the average man.

So therefore, if a task-work-with-bonus plan of payment is to be offered such that it will suit the average man and the best man, it must set a task which is attainable by the average man and offer a bonus which increases with the increase of work above the task limit. Thus the average man is set a pre-determined high level of efficiency and will be rewarded for attaining it; moreover the best man, and the other men grading in quality between him and the average, are able to obtain revenue according to their full earning capacity. Below-average men must be trained to better attainment, or may be transferred to employment to which they are better suited.

Under the operation of the plan first described, the workmen, finding that they had a fixed bonus, soon struck a gait which enabled each to earn the bonus but not do any more than the task specified during the day. Of course there were a number who could not learn to make the task and these men either quit of their own accord or when they showed a disposition to stick, were given other employment at which they could do well. The problem now was to advance from a fixed bonus plan (which was adopted as a temporary expedient only), to a variable bonus plan, which would offer additional reward for an increase of work beyond the assigned task.

The move was not only considered desirable; it was forced by circumstances. The work on the interior of the first ship was getting to a point where the end of it was in sight, and as circumstances were such that this 24-cent bonus could not be offered for outside work, either a new system had to be introduced or the management must face the same difficulties in getting the outside work done that had been contended with in getting the inside work done.

As a preliminary move a task was set for the outside work; the details of setting the task are not germane to this paper. Then, after setting the task, one or two fairly good men, not the best men nor yet were these barely average men, were selected and told to scale a stretch of outside work exactly equal to the daily task, this stretch having been carefully laid out in advance. They had no difficulty whatever in attaining the task in the prescribed time; both of them could have done more. This performance was to serve as an object lesson.

The proposition for a change in method in payment was then put right up to the men themselves. This was in a way a rather bold measure because the men were not of an educated class; they were ordinary day laborers who around Philadelphia could not hope to earn much more than $1.50 per day. Fully half of the men (there were 50 in all at that time) were negroes. The task before the management was to explain individually to these men in such a way that they could understand it, the workings of the complete task-work-with-bonus plan of payment; to show them that they would benefit by its adoption and yet make no statements that future experience would not bear out. It was in a way an amusing task because some of the questions asked were posers. Some of the men were suspicious. One big, husky negro refused to be interviewed alone; he insisted on having his mate with him, apparently fearing that he was going to be defrauded. After talking to each of the men individually they were all gathered together and the whole matter explained to them again and their questions were invited and answered fully. Absolutely not one phase of the matter was withheld from the men. The telling argument, of course was this: that no man stood to lose under the new proposition; day wages were offered to all hands and no matter how much of a day's work was turned in, day wages would be forthcoming, the management reserving the right, of course, to take action in the case of a man who constantly turned in an amount of work less than his day wages was worth, provided that it was clearly the man's fault. At the same time, to the man who turned in an amount equal to the task or greater, there was a very substantial bonus offered. Thus no man could lose and yet he stood to win; to increase his earnings 50 per cent. Many of these men had never before made more than $12 per week; $9 and $10 was a common average. They had recently been making about $14 per week and the opportunity was offered them to make from $20 to $25 per week. So they unanimously agreed to the new plan.

The new plan was submitted to the Navy Department and approved and very shortly thereafter put into operation. Incidentally it was required that each man should submit a request in writing for permission to work under this system of payment.

Very shortly the daily output of the good men began to increase. Where, for example, a man turning in 160 square feet per day under the fixed bonus plan, earned $2.24, under the variable bonus plan he earned as much more than $2.24 as his output was in excess of 160 square feet, at the rate of 1.5 cents per foot. The output began to increase, the work went ahead faster, earnings increased and while the cost per square foot for direct labor remained constant, the cost to the government was on the whole less because a greater output was obtained for the same overhead expense.

Each man's work was measured and inspected each day, and he was promptly advised as to whether he had made bonus, and how much. A running record was kept of their performances, on a bonus chart, Figure 7, which showed at a glance how each man was doing. Failures to make bonus were promptly investigated, with a view to helping the men, as well as to keeping up production.

The chart is interesting, as it shows that some men dropped out, due to unsuitability to the work; that some succeeded right away, and that some had to learn; it will be noted that the amount of gray in the second month is far less than in the first month, a graphic indication of the men's improvement. Some men, though they did well, quit anyhow; in most cases this was because they could not stand prosperity.

A great many of these scalers were rated as painters' helpers and they were making as much money as the painters themselves. This drew the attention of the painters to the new method of payment with the result that they began to suggest that tasks be set on

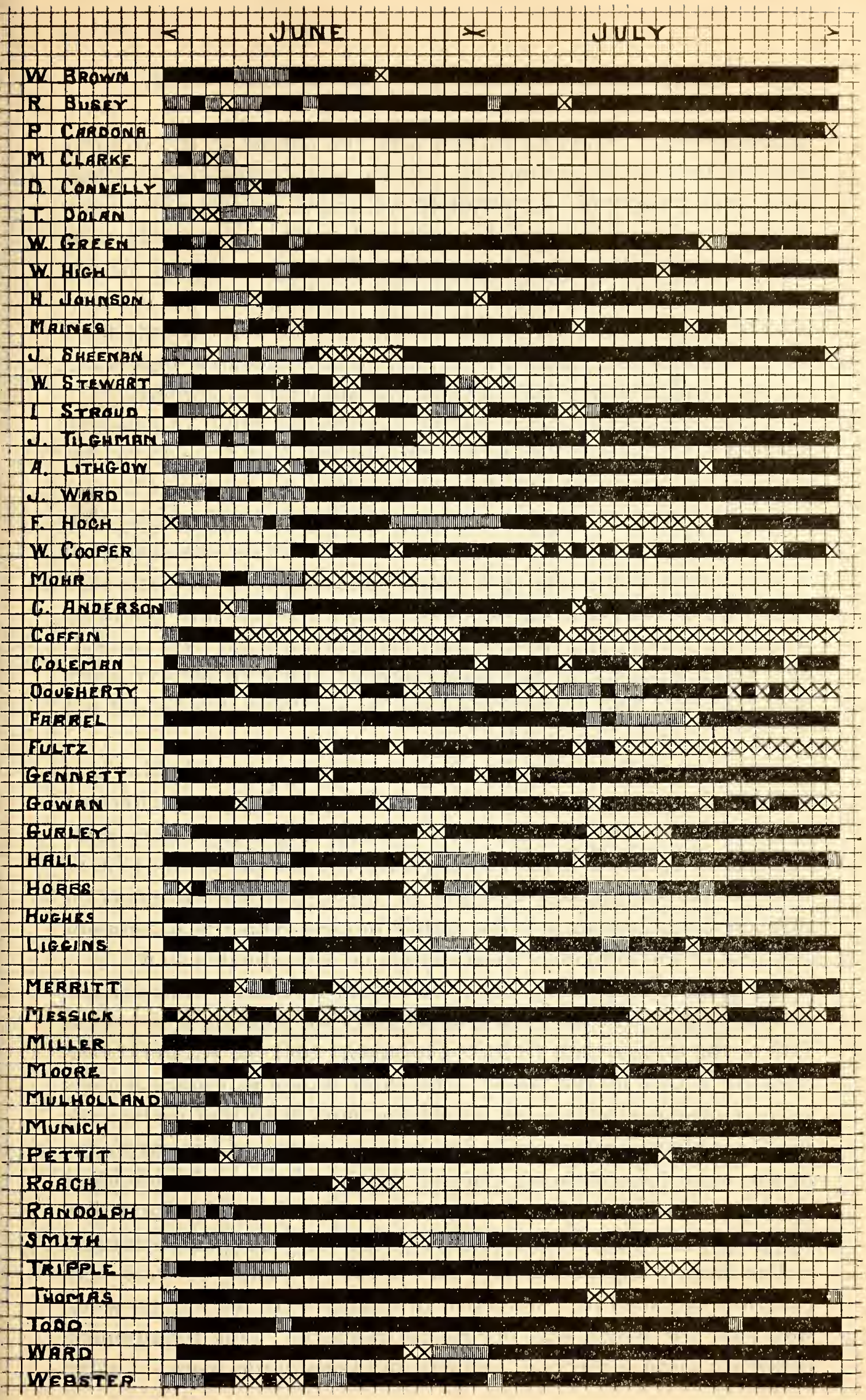


FIG. 7.—Bonus Chart, Scaling Paint. Black Squares, Bonus Made. Grey Squares, Bonus Not Made. Cross, Absent or on Other Work. Note Increasing Blackness of Chart as Men Increased in Skill.

painting work. Previous to that time the output of the painters had not been at all satisfactory. In the case of first coat red lead over scaled surfaces, for example, an output of only 150 square feet per man per day had been the rule. This was so absurdly slow that disciplinary measures were called for, and very shortly afterward the level was raised to about 400 square feet per day. At the same time, time study showed clearly that an output of from 900 to 1800 square feet per day was reasonable, depending on the location of the surfaces and the attending conditions.

A very considerable time was spent in the time study of painting, as it is not by any means the simple art that it looks to be. Incidentally while this work was proceeding, a painter who was invited to work for purposes of time study, refused, stating that he had been advised by friends not to work under the observation of a stop watch man. His view point was respected. He was kept at work; in fact, instructions were issued that he was not to be discharged under any circumstances other than at his own request; this as an evidence of the management's desire to respect every man's opinion and force no man to do anything that he did not think was for his own good.

For there is this difference between military organization and industrial organization: that whereas the underlying principles of both kinds of organization are the same, in putting these principles into effect in industrial organization the policy must be to observe the paramount interest of the individual, whereas in military organization it is the state's interest which is paramount and that of the individual must always be subordinated to it.

To make a long story short, be it said that after considerable investigation a way was found to set tasks for painting which were fair to the painter and to the government, and the painters were allowed to take up the work. The chart shown in Figure 8 compares individual production under day work with that under task work; it shows how greatly the painter increased his earnings; at the same time reducing the unit cost; and the high individual production indicates that the work went ahead *rapidly*—and that the progress of the work could be forecasted with great accuracy.

Far from being overlooked, the matter of *quality* of work was carefully attended to. Standards of quality were set, and no work was paid for which was not up to standard. This requirement called for rigid inspection, and ensured high grade work. Under

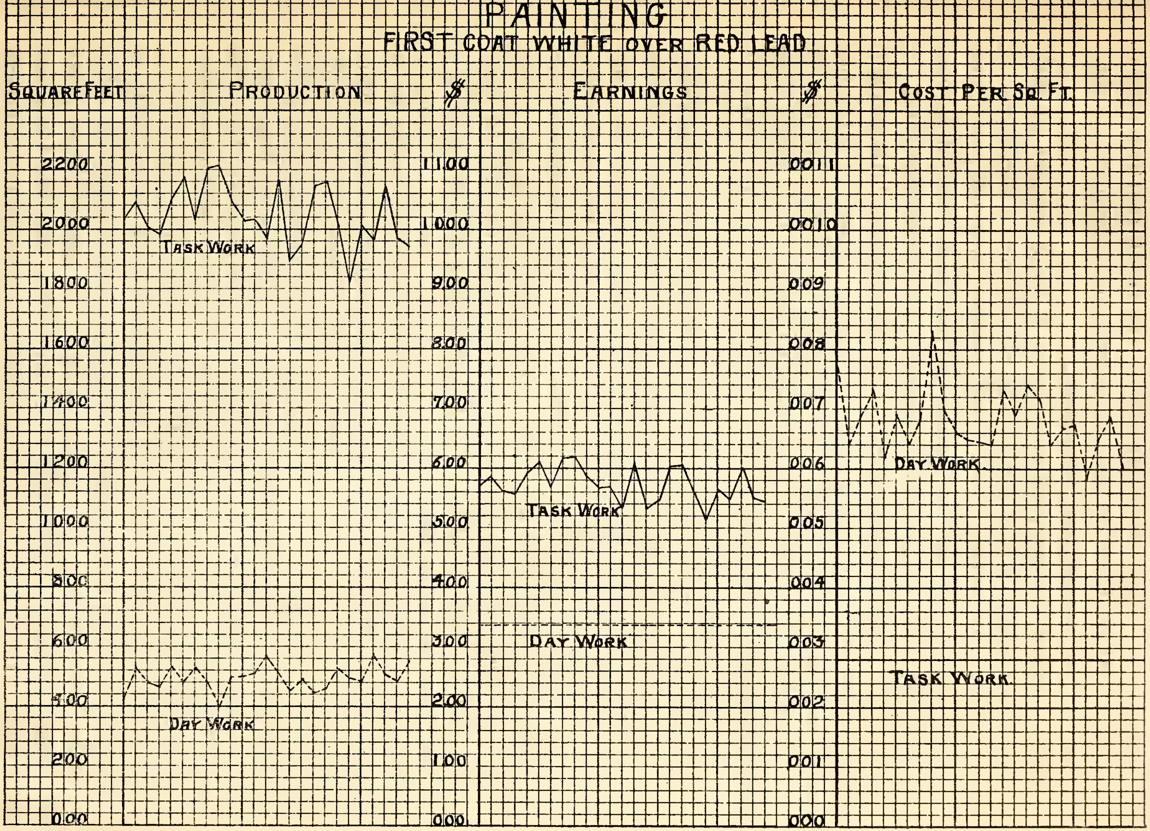


FIG. 8.—Chart Comparing Production, Individual Earnings, and Unit Costs, of Painting under Day Work and under Task Work with Bonus. Illustrates the Combination of Low Costs and High Wages

this plan of management the quality of work desired is established in advance, and must be attained, with the result that not only is more work turned out by the individual, but moreover, he does better and more nearly uniform work.

The work of a navy yard consists of a large number of little jobs. If each little job is done at the right time, in the best way, the work of the yard as a whole will be done promptly, well, and with economy. The only way to ensure that each little job is done at the right time is to appoint the time for its execution, and see to it that the appointment is kept. Left to itself the little job will be done, but not at the right time. The arrangement of little jobs as to precedence is known as the *scheduling* of work. To arrange these little job properly, it is essential to know how much time each little job will require. Hence the close connection between *task work* and *scheduling*.

With all the work of the yard on schedule, the Navy Department may know definitely when each ship is to be completed; what the effect on the dates of completion of other ships will be if the completion of a much-needed ship is to be advanced; the commanding officer may know well in advance when store rooms and magazines will be ready, and may learn the effect on his sailing day of an additional item of repair work; there will be an end to these exasperating waits between the disappearance of one gang and the appearance of the next.

It has not been possible, within the limits of this paper, to go into details, nor even to set down all the things that were done. The aim has been, rather, to illustrate what is meant by the application of the principles of modern industrial management to the problem of navy yard management; to show that something more than a superficial administration is needed, if the details of the work are to be looked after; that there is a wealth of detail that requires this attention; and that it can be done in a navy yard.

The problem before us is to train officers for navy yards in modern industrial management, so that they may really see what is to be done, and may *know how* to do it; to ensure that in peace time we realize the full value of every dollar that the Congress gives us, in maintenance and preparation; that upon the outbreak of hostilities our yards will be ready, with smoothly-working organizations, to get the fleet with its auxiliaries out to sea; that during hostilities the fleet may receive quick and efficient service.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

OUR NAVY AND THE WEST INDIAN PIRATES

(CONTINUED)

A DOCUMENTARY HISTORY

By Rear Admiral Caspar F. Goodrich, U. S. Navy

It is not to be expected that the story of West Indian pirates and our navy's dealings with them could long proceed without Lawrence Kearney's making himself felt. While others, under Porter's command, were operating along the north shore of Cuba, Kearney was cruising south of that island with the results herein recorded:

U. S. Schooner "Greyhound,"
Thompson's Island, August 10, 1823.

Sir:

I have the honor of transmitting, herewith, for your information, the enclosed report of the cruise of this vessel, commenced under circumstances of a vexatious nature, as the report will shew you; but, terminating in a manner, I trust, somewhat satisfactory to you, although the principal object pointed out in your letter (respecting the pirates at the Isle of Pines) has not met that success you may have anticipated; but I have the satisfaction to inform you, that, although I have not been so fortunate myself, it has been the fortune of others to apprehend those very villains who committed the outrage upon the American vessels *Reuben and Eliza* and *Mechanic,* as mentioned in your orders.[1]

They are now in prison, at Trinidad de Cuba.[2] Having had a communication with the governor of that place on the subject, I submit herewith my letter, with his answer, (together with some publications to be seen in Spanish newspapers,) for your information. Although I was not successful in getting the pirates into my possession, by the application made through the enclosed letter, and which, indeed, I did not expect; yet you will perceive, it has drawn an official acknowledgment of these pirates being in possession of the authorities; making it a matter of public notoriety, it becomes more obligatory to pursue their prosecution to a just and proper issue.

I take this occasion to express to you the high sense I entertain of the governor of Trinidad, which his attentions demand. He tendered us every civility and aid in his power in the persecution (*sic*) of our duties; offering to procure us a pilot, and, altogether, evincing a disposition of friendly co-operation, seldom met with on the island of Cuba.

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[1] *Vide,* p. 693.

[2] On the south side of Cuba about 30 miles east of Cienfuegos.

For your better information on the subject of our visit to Cape Cruz, I beg leave to subjoin the detail of events, in a more circumstantial and particular manner than given in the enclosed report, viz.

On the 20th ult. cruizing in company with the *Beagle,* lieut. commandant Newton, Cape Cruz bearing S.E. about four leagues, brought too (*sic*) and examined a small armed schooner, of about 35 tons, having three prizes in company. She proved to be a Colombian, duly commissioned, commanded by a Frenchman, and manned by Frenchmen and some others, apparently natives of the country where she belonged. Her commission was dated at Carthagena, last December. Her prizes were examined by capt. Newton, and found to be Spanish drogers, except one, a large canoe, calculated to carry about twenty men, which boat had been taken on shore, near the cape, where she had been abandoned by a party they supposed to be pirates, on being chased by said schooner.

On the following day, we stood in, with the *Beagle* in company, and anchored under the cape. Captain Newton and myself, as well for recreation as to examine the cape, landed with a small boat; but, finding the walking bad, we again embarked, and proceeded along shore in search of some settlement. Soon after getting out of sight of our schooners, (by doubling around the cape) a sudden and quick fire was opened upon us, from among a thicket of mangrove bushes and rocks, with which the cape was bordered.

The party was armed with muskets and blunderbusses, which were fired around us, alternately, without effect; at the same time, a firing upon us was opened from another quarter, from guns mounted on a high point of rocks a short distance ahead. Thus situated, with a cross fire upon us, enabled only occasionally to return the fire of the party in ambush, as some of them would dodge from bush to bush, or rock to rock; having for our arms but a fowling piece and one or two muskets, we were induced to return to our vessels, which we did. It being late, we waited till next day.

On the morning of the 22d, captain Newton and myself again set off, hoisting our colors upon the boat: as it was a fair presumption, that, in consequence of a Colombian vessel being on the coast, some mistake on the part of the people on shore, might have been made in regard to our character. But that proved to be groundless: for, having reached within the distance of their guns, they opened upon us with more apparent spirit and determination than before, from a position inaccessible, apparently in the rear, from the thickets of bushes and briars; and the same in front, from a precipice of rugged rocks; and so commanding altogether, that, to prevent the loss of lives, I directed both vessels to be warped round the cape, along an extensive reef, which almost encircles it, affording a smooth and shallow harbor. We did not succeed in getting within gun shot of the establishment, until we had reached five and six feet water, when we anchored.

Lieutenant Farragut, with the marines and some seamen, was ordered on shore, to endeavor to gain a position in their rear, to attack them, or cut off their retreat before the schooner moored, or their landing could be discovered by the pirates—as we had deemed the party we were about to attack. The officers of both schooners volunteered, and accompanied the party on shore, one being only reserved in each schooner, and a sufficiency of men for the guns, hoping to attract the attention of the pirates from Mr. Farragut's party. Several shot were fired from the schooners, which drove the pirates into places of security behind the jutting rocks, where they seemed to be in considerable force; the shot being seen to strike among the rocks behind which they sat; and not until the boats were despatched to land in front, and lieut. F's party was close upon them, did they abandon the advantageous position they occupied. They were pursued, but with so decided a disadvantage to the pursuers, from their want of knowledge of the passes, that none, unfortunately, were taken, except two old and decrepid beings, whose age and infirmities placed them beyond the merited chastisement their more active comrades, had they fallen into our power, would have received.

A four pounder, two swivels mounted on the heights, and some different articles of small arms, were found; they, however, escaped with their muskets and blunderbusses, or else hid them in some of the numerous deep and intricate caverns to be found on the cape: in one of which, various articles of plunder were stowed, but of no value; however, enough to show the character of the wretches who infest that place, human bones were found in the cave. We found eight boats, but not of a large size; their principal one was, no doubt, the one taken by the Colombian cruizer, as before stated; and those men armed with muskets and blunderbusses were, no doubt, of her crew.

From information derived from the prisoners, we learn that the captain of the gang was in prison in the interior of the island, for having burnt an English vessel off that cape. As a singular instance of the growing propensity of the present age for piracy, I have to inform you, that even a *woman* and *children* were of this gang, belonging to the captain of them—a second "Helen M'Gregor"; and the old men, too, who can do nothing else, light up the signal fire, which was done in the present instance, on our appearing on the coast.

In another case, a captain of a vessel informed me that he had been plundered by a gang of pirates, who took him by surprise, under the following stratagem, viz.

An old man, (his bald head and hoary locks exposed to view) and a little boy to steer the boat, pulled, or sailed along side of his vessel; when it was too late, discovered that a strong party lay concealed in the bottom of the boat, to whom he had to surrender."

The female just mentioned was removed to some place of safety before the attack was made, (said to be the wife of the captain).

Finding our pursuit of the pirates promised no success, I considered it unimportant to remain longer at the cape, having destroyed their means of doing further mischief for a time; and, taking into consideration the state of our officers and men, worn down by fatigue from a long pursuit over one of the roughest countries I have ever seen, their clothes nearly torn off, from bushes of impenetrable thickness, and their shoes cut off their feet by sharp pointed rocks, over which they passed, I abandoned the place, bringing off the arms, &c. of any consequence, and setting fire to every thing else that would *burn.*

One large and well thatched house, and three smaller ones, were consumed, and a quantity of fishing nets; and their furniture, which I have always observed to be a part of the outfits of a piratical establishment; they are merely used for their immediate wants, in procuring sustenance, when their real profession proves unfruitful, and obliges them to it.

I have written you a very long and full account of this affair, in order that you may be possessed of every information in my power to give, in the event of a question arising as to the propriety of landing and burning property on a foreign shore; and should this case be noticed by the supporters of "territorial jurisdiction," (over uninhabited parts of Cuba, notorious only for murder and piracy,) it will be seen that your officers and men's lives have been jeopardized, and the flag of their country made a target for the lawless villains to fire at, at their pleasure, and which will continue so to be, if any restrictions should be put upon our landing in similar places, where no authority exists than the will of the marauders themselves, who inhabit those places.

I took the liberty of releasing the two prisoners, as there was no proof to establish them pirates; and I furnished them a boat, with an express condition, that they should never appear again at the cape, and that I should take and treat as pirates, any persons found there hereafter, not furnished with a special license from the present captain-general of Cuba, setting forth their character and occupation.

This was taking upon myself, perhaps, too much; but it is now submitted to you, whether such a measure would not be proper, not only in regard to that place, but all others of a like position.

That there is a chain of intercourse with fishermen who live in such places, and pirates, I have no doubt; and it must be obvious from several cases of late.

As regards those at the Isle of Pines, they affect to know nothing of the robbery of the vessels your order mentions to me having taken place there; although the very articles of the cargoes of those vessels, I saw in their house.

At Cape Antonio, two years since, I found fishermen's huts, filled with piratical goods, papers, and letters, robbed from different vessels, strewed about their floors.

That fishermen, as well as pirates, should be moved from all the capes, or rather uninhabited parts of Cuba, where the proper authorities can have no control, I think necessary, and will I hope be the case.

Very respectfully, I have the honor to be
Your obedient servant,
LAWRENCE KEARNEY,
Lt. Com'dt U. S. Navy.

Com. David Porter, Commanding U. S.
Naval Forces in the W. Indies and Gulf of Mexico.

P. S. In my report of the affair at Cape Cruz, I forgot to mention, that we were *not either hailed,* or was there any colors displayed by the party that attacked us, by which we could ascertain their character.

As regards *our character,* they could have *no great doubt:* for they had seen us communicating with an English ship of war, close off the cape, on the same day of our arrival.

I was informed by the governor of Trinidad, of pirates infesting the coast to the eastward of that place, and was induced to proceed within the keys in pursuit.

On my way, boarded a small schooner, belonging to the Grand Cayman island, and the information before received was corroborated by her master.

Under these impressions, I reached Cape Cruz, and our reception there induced a belief that we had met the party complained of.

I am, very respectfully,
Your obedient servant,
L. KEARNEY.

Com. David Porter, Commanding U. S.
Naval Forces in the W. Indies and Gulf of Mexico.[3]

Particulars are lacking of the "outrages" on the *Reuben and Eliza* and on the *Mechanic,* as well as any information as to the place where the following occurred:

July 30—The brig *South Carolina,* Johnson, was boarded by a piratical brig. After taking several articles from her, she was suffered to proceed.[4]

Judging from the records of this time, deep sea piracy had almost entirely disappeared, but boats from the shore were lying in wait at many points for vessels becalmed. The cruising of our ships off the Cuban coast was peculiarly interesting, not to say irritating, to the Spanish officials. Lieutenant Gregory, in the U. S. schooner *Grampus,* lay for some time off Matanzas, watching and inspecting all vessels that went in or passed out, thus effectually preventing piracy in that quarter. This appears to have displeased some of the inhabitants there, and even the governor sent word to Lieutenant Gregory that he had remained in that vicinity too long, and that vessels of war could anchor for 48 hours only. However, Lieutenant Gregory frankly stated his object and said that he would remain where he was until compelled to retire.[5]

The satisfaction expressed at home in May was, as already suggested, somewhat premature. "The history of the pirates

[3] N, October 28, 1825. Besides the interesting narrative of this affair in Loyall Farragut's Life of his Father, p. 955, reference may be made to NEE, 310; CDP, 286; E, 78, HP, 282; MHM, 256; NE, 548; CHN, III, 27.

[4] MWHP.

[5] N, August 30, 1823.

seems as if brought to a close, for the present, by the efforts of Commodore Porter and the officers and crew of his squadron. We have not heard of the capture of any vessel since that of the *Pilot*, of Norfolk, and she was retaken by our squadron."[6] Except the capture of the brig *William Henry*, off Porto Rico, toward the end of the year, there are no instances of piracy recorded after July 30, so the Secretary of the Navy, in his annual report, December, 1823, could truthfully claim that Porter's squadron had substantially achieved its purpose. A portion of this report here follows:

> On the western side of the Atlantic ocean, and in the Gulf of Mexico, the operations of our naval force have been more active. Several vessels were in commission there at the close of last year. To these were added, under the authority of the law passed at the last session of Congress, "authorizing an additional naval force for the suppression of piracy," the steam galliot *Sea Gull;* eight small schooners, ... ; and one transport ship, ... Captain David Porter was appointed to the command of the squadron, and sailed from Norfolk about the 10th of February last. His station was at Thompson's Island, from which he despatched his vessels in such a way as he judged best suited to attain his objects. . . . . The size of most of the vessels, the nature of the duties, and the exposure of the officers and men, called for a display of perseverence and fortitude seldom required of those engaged in our service. But the call was well answered; every thing was accomplished which was anticipated from the expedition. Piracy, as a system, has been repressed in the neighborhood of the island of Cuba, and now requires only to be watched by a proper force to be prevented from afficting commerce any further in that quarter. The public authorities of the island of Cuba manifested a friendly disposition towards the squadron, and rendered much assistance in the pursuit of its objects.

In speaking as he did of the assistance of the Cuban authorities, the Hon. Smith Thompson must have been moved by a diplomatic —or shall we call it a generous—impulse.

Certain passages in President Monroe's message to Congress of this year merit particular attention: That, commending Porter's zeal and enterprise, should be borne in mind when, in the ensuing year's story, we shall read of the treatment this splendid officer received at the hands of the Administration; and those relating to affairs in Porto Rico and the discourtesy, to use no harsher word, experienced by our minister in Madrid when seeking redress for notorious grievances.

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[6] N, May 24, 1823.

The President says, in part:

In the West Indies and Gulf of Mexico our naval force has been augmented by the addition of several small vessels, provided for by the "act authorizing an additional naval force for the suppression of piracy," passed by Congress at their last session. That armament has been eminently successful in the accomplishment of its object. The piracies by which our commerce in the neighborhood of the Island of Cuba had been afflicted, have been repressed, and the confidence of our merchants in a great measure restored.

The patriotic zeal and enterprize of Commodore Porter, to whom the command of the expedition was confided, has been fully seconded by the officers and men under his command. And in reflecting with high satisfaction, on the honourable manner in which they have sustained the reputation of their country and its navy, the sentiment is alloyed only by a concern, that, in the fulfilment of that arduous service, the diseases incident to the season, and to the climate in which it was discharged, have deprived the nation of many useful lives, and among them of several officers of great promise.

Although our expedition co-operating with an invigorated administration of the government of the Island of Cuba, and with the corresponding active exertions of a British naval force in the same seas, have almost entirely destroyed the unlicensed piracies from that island, the success of our exertions has not been equally effectual to suppress the same crime, under other pretences and colours, in the neighbouring island of Porto Rico. They have been committed there under the abusive issue of Spanish commissions. At an early period of the present year, remonstrances were made to the governor of that island, by an agent, who was sent for the purpose, against those outrages on the peaceful commerce of the United States, of which many had occurred. That officer, professing his own want of authority to make satisfaction for our just complaints, answered only by a reference of them to the government of Spain. The minister of the United States to that court was specially instructed to urge the necessity of the immediate and effectual interposition of that government, directing restitution and indemnity for wrongs already committed and interdicting the repetition of them. The minister, as has been seen, was debarred access to the Spanish Government, and, in the meantime, several new cases of flagrant outrage have occurred, and citizens of the United States in the island of Porto Rico have suffered, and others been threatened with assassination for asserting their unquestionable rights, even before the lawful tribunals of the country.[7]

1824

The naval force during 1824 in the West Indies consisted of the following, under the command of Commodore David Porter:

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[7] Monroe's Seventh Annual Message, December 2, 1823.

Sloop of war *Hornet*	Master Comd't	Edmund P. Kennedy
Corvette *John Adams*	" "	Alex. J. Dallas
Steam galliot *Sea Gull*	Lieutenant	Isaac McKeever
Brig *Spark*	"	John T. Newton
Schooner *Shark*	"	John Gallagher
" *Grampus*	"	J. D. Sloat
" *Porpoise*	"	Charles W. Skinner
" *Weazel*	"	Charles Boarman
" *Fox*	"	John A. Cook
" *Terrier*	"	J. S. Paine
" *Beagle*	"	Charles T. Platt
" *Ferret*	"	Charles H. Bell
" *Jackall*	"	James P. Oellers
" *Greyhound*	"	W. A. C. Farragut
" *Wildcat*	"	Legare (also Wolbert)
Storeship *Decoy*	"	Mervin P. Mix

As long as our cruisers remained active in the West Indies during this year, piracy was infrequent, weeks indeed passing with no instances recorded, but when they were driven north by a serious epidemic of yellow fever during that summer, it broke out again with its old vigor and with its accustomed accompaniment of cruelty.

The lull in its activity, which characterized the winter of 1824-5, was not misunderstood or misinterpreted, at least locally. A private letter from Matanzas, dated February 20, 1824, after reporting the *Jackall, Ferret* and *Terrier* in port, and the arrival, during the previous evening of the *Shark* which had come from the Windward Islands, says:

> Piracies are completly restrained but the *pirates* still exist and whenever the restraining power disappears their depredations will be renewed.[8]

Even at home our people were not wholly deceived into a false sense of security. On February 25, a resolution was introduced in Congress providing for supplying armaments to vessels in the West India trade. While nothing came of this resolution, it proves at least that the risks to our commerce were still present in the public mind.

As the spring advanced, the pirates, possibly wearied through long waiting, began to emerge from their lairs, thus offering to our eager commanders long hoped-for opportunities. On March 12, the crew of the U. S. schooner *Grampus* fitted out a decoy sloop, and succeeded in capturing a sloop with 11 men, including the captain.[9] On March 19, Voorhees in the *Sea Gull,* recaptured off La Vecheo, on the southern coast of San Domingo, the American schooner *Pacification,* a prize to a Columbian privateer.[10] Again, on March 26, the *Sea Gull* captured a piratical schooner, after killing eight or ten of the pirates and making 19 prisoners. The same day they captured another small schooner which was burnt, the crew escaping.[11]

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[8] N, March 20, 1824.

Porter now made a long voyage of inspection, of which the result is here reported:

U. STATES SHIP "JOHN ADAMS"
OFF HAVANA, April 8, 1824.

Sir: I have the honour to inform you that, in my route to this place, I have touched at St. Bartholomews, St. Christophers. St. Thomas, examined the south coast of Porto Rico, looking in at the Dead Man's Chest, and Ponce, two noted places for Porto Rico privateers; touching at Mona's, St. Domingo, Beata, and Kingston, making diligent inquiries and examinations for piratical vessels, and offering convoy and protection to vessels of all nations from piratical aggressions.

In the course of this long route, although we have visited places formerly the rendezvous of pirates, and seen evidence of their having been recently there, we have not been so fortunate as to capture any, nor have we seen any vessels of a suspicious character, until two days since, when we pursued a small schooner, which took shelter among the Colorado Reefs,[12] and from every circumstance there cannot be a doubt she is a pirate.

I shall, as soon as I can place the vessels now under convoy in safety, hasten to Thompson's Island, to despatch the barge and small vessels in pursuit, and hope, in a few days, to have her in possession.

It appears that an attempt has been made to revive, on the south side of Cuba, that system of piracy which had so long prevailed.

The British have lost some men in attempting to suppress it, and the fortunate assemblage of a large British force, at the Isle of Pines, has, I have been informed, caused a dispersion of the gang.

Nothing but the presence of a strong and active force can keep them in order.

I have the honour to be, your ob't servant.

D. PORTER.

Hon. S. L. Southard, Sec'y of the Navy.[13]

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[9] MWHP.

[10] C. L., 1824, Vol. 1, No. 154a.

[11] MWHP.

[12] Northwest side of Cuba.

[13] NEP, May 1, 1824.

U. S. SHIP "JOHN ADAMS,"
THOMPSON'S ISLAND, April 12th, 1824.

Sir:—I have the honour to enclose the papers of the American brig *William Henry,* which was taken by the pirates.

The following extract from a letter from Lieut. Jno. T. Newton,[14] will explain how he became possessed of them.

"On the 8th (February) we arrived at the Island of Mona, and gave it a strict examination, but could find no inhabitants. There was a hut and tent discovered, but, from appearances, had not been recently occupied. A medicine chest, full of medicine, some charts, books, sails, rigging, blocks, &c. and all the papers relating to the American brig *William Henry,* of Baltimore, were found, all of which I took on board, and have left some of the articles in charge of Mr. Thornton, for you, sir, I caused the hut and tent to be destroyed, together with a large canoe that we found in the vicinity."

I have the honour to be, very respectfully, your obedient servant.

D. PORTER.

To the Hon. Samuel L. Southard,
Secretary of the Navy.[15]

It is difficult, even now, to weigh the slight successes of Porter and his squadron against what was expected, or might have been done had he possessed a much larger number of appropriate vessels with which to search out every possible hiding place; yet he did not escape criticism for his comparative failure, as so regarded at home. A specimen of the strictures passed upon him, with his indignant reply, is worth reading to-day. No commander can expect to be free from such reflections which are, as a rule, ignored by their object, but Porter was not the man to refrain from speaking out in his own defence.

Yet, at this very time, the newspapers were publishing the glad news that acts of piracy in the West Indies were comparatively rare.[16]

If the charts of Cuba be examined, it will be seen that a more thorough search of the coast from La Ortigosa, 40 miles west of Havana, to Cape Antonio, could hardly have been made than that described by Captain Wilkinson, going over the same ground covered by Cassin during the previous year. Behind the outlying

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[14] Of the brig *Spark* which had arrived at Matanzas, via the old Bahama channel, after examining the coast and islands from St. Barts (Bartholomew) westwards. (NEP, March 15, 1824.)

[15] NEP, May 1, 1824.

[16] N, March, 1824.

Colorados reef are innumerable places admirably adapted to shelter vessels of light draft. The absence of piratical craft proved that here, at least, and for the time being, the nefarious traffic had ceased:

U. S. STEAM GALLIOT "SEA GULL,"
April 24, 1824.

Sir:

I have the honor to report to you my return with the steam-galliot *Sea Gull* and four barges, having given a thorough examination of the coast of Cuba, inside the Isabelle and Colorados, in search of pirates, agreeable to your orders of the 12th instant.

The *Sea Gull* and one barge entered at Cape Antonio, and progressed eastward; and with three barges I commenced at the river Ortigosa, and progressed westward, examining minutely every part of the coast until I met the *Sea Gull,* with the whole of the forces.

I then proceeded to the spot designated by you for the anchorage of the *Greyhound,* where I arrived on the 20th instant, took in a supply of water and provisions, and sailed the same evening for Thompson's Island, with the *Greyhound* and *Fox* in company. I despatched the *Greyhound* for Havana. It being calm at 7 o'clock yesterday morning, made signal for the *Sea Gull* to take the barges in tow, and also for the *Fox* to make the best of her way to Thompson's Island.

I ascertained, from several concurrent statements, that the celebrated pirate Diableto sailed from Cape Antonio about ten days previous to our arrival there; his destination unknown, but supposed to be for the coast of Yucatan, (from the coast he steered off,) to increase his armament, having at that time but eight men, and nothing but small arms. The schooner he commanded he had captured but a short time before on the coast of Cuba.

I have the honor to be, sir, your obedient servant,

J. WILKINSON.

Commodore David Porter,
Commander-in-chief of the U. S. naval forces in the
West Indies, Gulf of Mexico, and coast of Africa.[17]

Suppressed, however, at one point, piracy broke out at others —off Matanzas, east of Havana and near Porto Rico.

Piracies are pretty frequent off the coast of Porto Rico—those who commit them belong to the island and come off in open boats, often adding murder to piracy. They are sometimes detected and hung by seven or eight at a time.[18]

Failing to discover pirates west of Havana, the *Sea Gull* moved to the east with better results.

[17] ASP, I, 1006.

[18] N, May 1, 1824.

May 10—The schooner *Florian,* of Warren, was captured off Matanzas. The schooner *Alpha,* Hammond, was brought to at the same time, but escaped and gave information to the U. S. steam galliot *Sea Gull,* which went in pursuit, recaptured the *Florian,* and took several of the pirates.[19]

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[19] MWHP; N, May 29, 1824, calls this vessel the *Florida,* as does NEP, May 25, 1824, which states that three piratical boats took part in this capture and that " Pirates escaped."

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

COMPULSORY CITIZENSHIP TRAINING

By Dr. Harold S. Hulbert

At the present time there is much discussion about the compulsory military training, and while the plans are still in the formative stages it is proper to bring forward ideas which will modify and extend these plans. Compulsory military training is only a part of a needed and greater opportunity. It is here proposed to inaugurate plans *to survey* and *to instruct* all the male population as the young men reach the age of military training.

In the last two years, both the army and the navy have had experience in amplifying their present formations. The army has had some opportunity in its Plattsburg Camps for instruction and has enlarged its skeleton form by taking in the organized militia for service on the Mexican border. The navy, last summer, not only had a cruise for the organized militia, but it had a more extensive cruise for the training of civilian volunteers. There are two possible conditions which would greatly enlarge the army and navy.[1] One is the declaration of war and the other is the adoption of the idea of compulsory military training. In case of the latter, many changes must be established.

At the present time when a young man goes up for recruiting examination, he is rejected if he has defective vision, bad tonsils, dental trouble, syphilis, tuberculosis, mental disease, hernia, flat-foot, etc. Those physically fit are accepted, but the physically unfit are rejected, and as far as the state is concerned they are lost from sight. This certainly is a waste of efficiency. It is here proposed that the examination be made more thorough than any one man can make it, and also that it be made more thorough than the examinations are at the present time in the army and navy for recruits, or the examination at Ellis Island and similar places for immigrants. The young men could be gathered together when they are about to enlist for their term of military training and examined in large groups. The examinations should be made in central places, such as in large cities, and should be in properly equipped institutions, such as hospitals. Examinations should be made by a corps of specialists; a skilled ophthalmologist to examine each recruit for his vision; an internist for tuberculosis, enlarged heart, and so on; a dentist for his teeth; a surgeon for hernia and orthopedic abnormalities; a psychiatrist for his mental condition, etc. If the recruit is physically fit he may then be accepted for military service at once. If not, he should be referred to some suitable clinic or hospital, or private physician, for treatment and it should be demanded that after the treatment he re-appear for examination and the report of the treatment be forwarded to the officer in charge of the recruiting station. It is possible that the treatment would extend over a number of years for such diseases as tuberculosis, syphilis, malaria, hook-worm, etc. If he is insane, feeble-minded or epileptic, he would be put in a suitable institution for custody and treatment. At once the national efficiency, both for civil and military duties, in peace or in war, will be greatly increased. At the same time that the man is being surveyed for his medical examination, it would be possible by study of the individual to determine the field where his ability and capacity to learn would make him of the most value, *e. g.*, in certain branches of the army and navy, railroads and munitions and at the base. Too many of our young men simply drift into their occupations and they do not select them from choice, nor with discretion; but a little suggestion properly given to the individual would also arouse his ambition and help him to find the best possible work in civil life later.

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[1] Written before the declaration of war.—Ed.

Of equal importance with examining all our young men, is the point that they may be given *instruction* in the fundamental things which good citizens should know. It may be assumed that the average young American, of native or of foreign birth, has attained a sixth grade education. These young men can well be benefited by brief lectures given while the men are at the camps for military instruction, by civilian and government lecturers who have appropriate rank. For example, there could be talks on thrift, banking and insurance, or on the prevention and cure of tuberculosis, cancer, and other diseases, on the duties and obligations of a voter, on the American forms of government in city, state and nation, on elementary laws, on American ideas of Democracy and of personal opportunity. No time should be wasted in talking about theories which are not generally accepted. For men above the average mentality there would be advanced courses appropriately graded. The general knowledge which the men would gain while at camp would be brought home by them and thus the women would be indirectly benefited; but whether or not it is possible to *survey* and directly to *instruct* in citizenship the women, is a question which needs further study.

It is essential that at the camps for instruction there must be an attitude of seriousness, because the military and the educational work will be intensive. It is to be regretted that at the present time the newer recruits in the army and navy wear an air of bravado and braggodocio. Until this defect is remedied by the officers of the army and navy the American people will not support any idea for compulsory service because of the desire to shield and protect the youth of their families. The welfare work being done now by the American Young Men's Christian Association in the European armies and prison camps indicates how the noblest of American ideals may be exemplified.

The supporters of the present great worthy propagandas, such as the prevention of tuberculosis, life extension, and others, will undoubtedly be interested in any plan which coordinates their work and which carries out to a logical conclusion their plans of surveying and instructing all those who need their advice. There are many people who have not felt that they could sincerely support the idea of compulsory military service for military purposes only, but it is hoped that these suggestions will appeal to all of those who are interested in any of the great movements for a safer and greater nation, for better citizenship and for more efficient citizens.

It will be necessary to secure the assistance of public officials, both in the government and in the lines mentioned. There must be public demand and public support for compulsory citizenship training for efficiency and defence, by *surveying* all our young men as they reach the age for military service and by *instructing* them in the essentials of good citizenship.

DISCUSSION

Logistics, Etc.

(See Page 773, Whole No. 170)

Rear Admiral Seaton Schroeder, U. S. Navy.—At the end of the first paragraph of my critique the printer, I see, has made the mistake of ending the quotation after the words "Bureau Chiefs" so as to exclude the final sentence "This I believe to be radically incorrect" instead of including it in accordance with the MS. This has the effect of attributing to me the statement which I did not make, and of denying the authorship of it to Captain Huse who did make it. This is regrettable, and I will be very glad if it be found possible to publish this correction in the next number.

U. S. NAVAL INSTITUTE

SECRETARY'S NOTES

Important Notice

The Board of Control on the occasion of its December meeting decided to grant to enlisted men the privilege of purchasing the Institute's publications on the same terms as are extended to the midshipmen at the Naval Academy. On all orders for ten or more copies of the same publication and on all orders amounting to $10.00 the price charged will be the same as that charged by the midshipmen's storekeeper, plus carriage; for individual orders, the terms are as advertised in the Institute's "Book List."

Officers of the fleet and training stations—especially division officers—are requested to keep their men informed as to the benefits to be derived from subscriptions to the Institute, from its publications, and from its book department.

There seems to be some misunderstanding on the part of the enlisted personnel as to the terms of subscription to the Institute PROCEEDINGS, subscriptions to the amount of $3.00 having been received. Enlisted men may receive the PROCEEDINGS as subscribers on the same terms as regular members, viz.—at $2.00 per year.

Terms to Training Organizations

The Board of Control voted on April 5, to extend the above privilege for the benefit of naval militia, naval reserve, coast guard, naval training association and other organizations under the cognizance of the Navy Department. It was also decided that the Institute's book department would hereafter handle all orders for Hydrographic office publications without commission.

Book Announcements

The Institute announces the completion and issue of a revised edition of A Manual of International Law for the use of naval officers by Rear Admiral C. H. Stockton, U. S. Navy, retired. The value of this work has been greatly enhanced by the addition of a supplementary chapter on the new situations which have arisen during the present war; facsimiles of papers required to be carried by merchant vessels; and a complete index which satisfies the requirements of those using it as a reference book or as a text book in studying for examination.

Suggestions Invited

Comment and suggestions relative to the make-up of the PROCEEDINGS are invited from all members interested in the welfare of the Institute. It is believed that the scope of usefulness of the PROCEEDINGS to members can be increased and all members are invited to assist in this work. Should any topic, on which you think an article could well be written, occur to you, send it to the Secretary and Treasurer, together with such explanation or comment as may appear desirable in order that the intent of the suggestion may be clearly understood. The Institute is desirous of obtaining good " sea yarns " for publication. It is hoped that any one who can spin such a yarn will submit it.

Membership

Since March 16, 1917, 12 regular and 16 associate members have joined the Institute. One regular member has transferred to life membership, and one joined as life member.

The following have died:

Commodore J. B. Collins, U. S. N., April 13, 1917.

Amendments to Constitution

Members are urged to send in their ballots on the proposed changes in the Constitution of the Institute. As explained in the memorandum issued by the Board of Control, no action can be taken unless a *majority* of the members send in their ballots. To date about 45 per cent of the members have done so.

Book Department

The Institute Book Department will supply any obtainable book, of any kind, at retail price, postage prepaid. The trouble saved the purchaser through having one source of supply for all books, should be considered. The cost will not be greater and sometimes less than when obtained from dealers. Bills will be rendered upon delivery of books.

Illustrations

Authors of articles submitted are urged to furnish with their manuscript any illustrations they may have in their possession for such articles. The Institute will gladly co-operate in obtaining such illustrations as may be suggested by authors.

Original photographs of objects and events which may be of interest to our readers are also desired, and members who have opportunities to obtain such photographs are requested to secure them for the Institute.

Annual Dues The annual dues for 1917 became payable on January 1, 1917. It is suggested that dues be paid in lump sums covering a period of two to five years; this method of payment has advantages for members as well as for the Institute and is practiced by a number of members, both regular and associate. Response to this notice will save the Institute a considerable sum in stationery and postage.

Notice Whole Nos. 145, 146, 147, 149, 155 and 166 of the PROCEEDINGS (March, 1913, June, 1913, September, 1913 January-February, 1914, January-February, 1915, and November-December, 1916) are exhausted; there are so many calls for single copies of these numbers that the Institute offers to pay for copies thereof returned in good condition at the rate of 25 cents per copy.

Address of Members *All members are urged to keep the Secretary and Treasurer informed of the address to which* PROCEEDINGS *are to be sent, and thus insure their receipt.*

This precaution is now of particular importance as notices of changes of station are not now available for the use of the Institute's staff.

Non-receipt of Proceedings Members and subscribers are urged to notify the Secretary and Treasurer promptly of the non-receipt of PROCEEDINGS, in order that tracers may be started. The issue is completed by the 10th of each month.

Reprints of Articles The attention of authors of articles is called to the fact that the cost to them of reprints other than the usual number furnished, can be greatly reduced if the reprints are struck off while the article is in press. They are requested to notify the Secretary and Treasurer of the number of reprints desired when the article is submitted. Twenty copies of reprints are furnished authors free of charge.

Notice to Newsdealers The discount to newsdealers is now 10 per cent, instead of the 25 per cent heretofore allowed on subscriptions.

ANNAPOLIS, MD., April 16, 1917.

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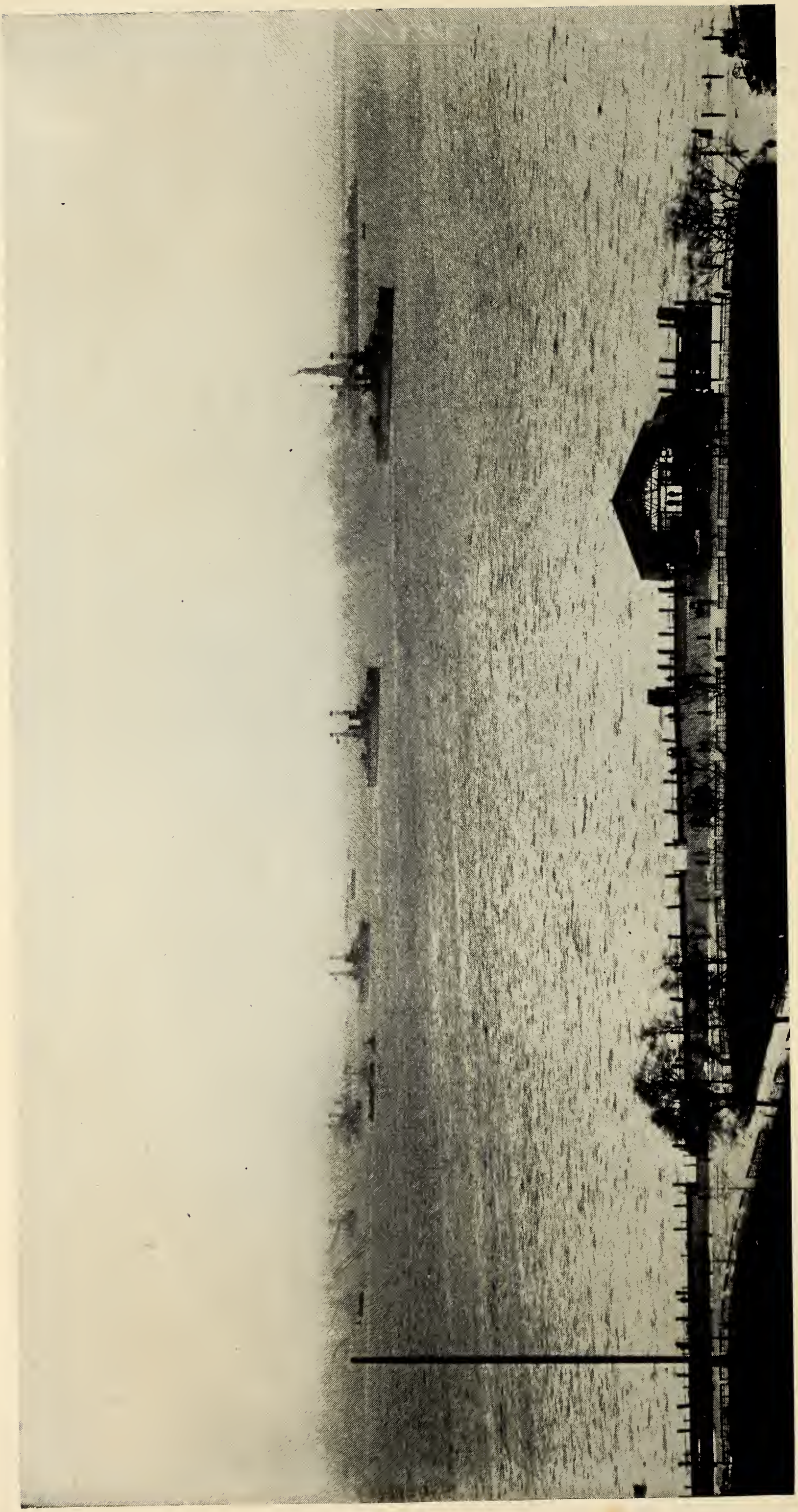

Battleship Squadron Entering New York Harbor

PROFESSIONAL NOTES

Prepared by Lieutenant I. C. Kidd, U. S. Navy

GENERAL ARRANGEMENT

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Note.—Ship construction in the nations at war is held confidential and no reliable information is available.

ARGENTINA

Shipping Policy in South America.—There is a plan on foot by the South American republics to form a shipping association which will have for its object the creation of a large and independent South American mercantile marine. There has already been introduced a bill by the Argentine Government to prohibit the sale of merchant vessels under that flag; Brazil has taken similar action and is conserving and fostering her shipping to the utmost. That there is urgent need of such steps is shown by the fact that the Argentine merchant marine, which in 1914 had 230,000 tons to its credit, had at the end of last year been reduced to 180,000 tons, principally owing to sales abroad.—*Marine Journal,* 4/7.

AUSTRIA

A Significant Change.—As a sequel to the death of Admiral Haus, a change has been made in the control of the Austro-Hungarian fleet, and for the first time a Ministry of Marine, as a more or less separate and distinct organization, has been created. Admiral Haus filled the dual office of director-general of the Naval Department of the Minister for War and commander-in-chief of the fleet. It will be recalled that Bismarck adopted another method of marking the subordination of the German Navy to the army. He placed a general in the office of naval secretary. In Austria the control of the fleet has always been confided to a naval officer, but he has been subordinate to the Minister for War, in theory, if not in fact.

Though Admiral Haus was only director-general of the Naval Department, he had a seat on the Council of Ministers. An Imperial decree has now been issued changing the organization. As head of the Naval Department, Admiral Kailer von Kalpenfels has been appointed as Admiral Haus' successor, and he will represent the naval administration on the Council of Ministers. The other functions discharged by Admiral Haus, namely, those of commander-in-chief of the fleet, will now be carried out by Admiral Njegovar. Whether these new appointments indicate any change in naval policy, time alone can show. It must have been a source of great inconvenience and some confusion to have an officer flitting between Vienna and Pola in the effort to keep abreast of his varied duties. In future, this will be avoided; one officer will live in Vienna, while the other will command the fleet at Pola. The odds against the Austro-Hungarian fleet are heavy, and it is difficult to imagine conditions which would tempt it to adopt the offensive. So far it has followed the example of the Germans, and naval effort has been restricted to activity on the part of destroyers and submarines. Though losses have been sustained both by the Italian and French navies, there is reason to believe that the relative strength of these two fleets is greater to-day in contrast with the enemy's forces than it was in May, 1915, when Italy entered the war.—*Naval and Military Record, 2/28.*

CHILE

SUBMARINES.—It has been announced that Rear Admiral Louis Gomes Carreno, of the Chilean Navy, visited the Boston Navy Yard, March 27, for an inspection of the group of 10 submarines interned there. The submersibles were built at the Fore River Shipbuilding Corporation's plant at Quincy for Great Britain. Five of them, it has been stated, have been given to Chile by Great Britain as part payment for two Chilean superdreadnoughts which were taken over after the outbreak of the war while under construction in British shipyards.—*N. Y. Herald.*

GERMANY

GERMANY'S SHIPPING LOSSES.—At a recent lecture before the Institute of Science of Navigation it is reported that Captain Schroeder, a German merchant captain of Hamburg, stated that since the outbreak of war 152 German ships, representing 452,000 registered tons had been destroyed by mines or torpedoes; 267 ships with a cargo capacity of 807,000 tons, had been captured by the enemy; and 621 merchant ships, of 2,341,000 registered tons in all, were lying interned in neutral harbors. In German harbors there were 490 steamships, of a total of 2,400,000 registered tons. This meant that 7.5 per cent of German tonnage was irrevocably lost, 13.4 per cent was in the hands of the enemy, 39.1 per cent was in neutral harbors, and 40 per cent in German ports, nearly all lying idle.—*Page's Engineering Weekly, 2/23.*

STANDARD CARGO STEAMERS FOR GERMANY.—The Pommern Wherft Aktiengesellschaft (Pommern Yard Co., Ltd.), has been formed in Germany with a capital of 10,000,000 marks, and work will commence in a few weeks with the building of a series of standard cargo steamers respectively of 4000, 7000 and 10,000 tons deadweight.—*Shipping Illustrated, 4/7.*

MANGANESE SUPPLY.—Quoting from an article by Frank Jovis, in *The Iron Age, The Scientific American* says:

"One thing is indisputable, Germany is very short of manganese, and all substitutes have failed to give as satisfactory results in spite of the assertions in the daily press. This is emphasized by the commandeered silence on the question of steel quality and the high price the German iron works are willing to pay for high-grade manganese ore. The substitutes that were tried out and disappointed many chemists were more costly and yielded such poor results that ferromanganese percentage is still the most used recarburizer of steel."

GERMAN CONSTRUCTION; ALSO ADDITIONAL DATA ON THE BATTLE OF JUTLAND.—The *Telegraaf* of Amsterdam published on February 12 a long statement from a seaman of the first class, who had deserted from the German Navy. He had seen six years' service and received the Iron Cross for his conduct in the Jutland battle.

In commenting upon his statement the *Telegraaf* points out that it has been unable to check up its accuracy except as to the revelations the sailor makes in regard to Germany's new ships—these it has been able to confirm from other sources.

In the Jutland battle, May 31–June 1, the writer states that he was on board the *Lützow,* which sank, carrying down 300 of her crew of 1600. On August 19 he served on board the *Grosser Kurfürst.* With four other vessels, the *Markgraf, Bayern, von der Tann* and *Moltke,* she steamed out to attack the English coast, but was warned of the approach of the British fleet and quickly returned.

They left again eight days later with the *Markgraf* and the *Bayern* to seek a strayed Zeppelin, but returned home unsuccessful. It repeatedly happened that Zeppelins, torpedo-boat destroyers and submarines were lost, but these losses were never announced, as they occurred so often.

He was last aboard the new battleship *Baden,* 30,000 to 35,000 tons. She had not less than eight guns of 38 cm. (15-inch), also 16 quickfirers of 15 cm. (6-inch), and eight 8.8 cm. (3.5-inch). This ship was not yet completely finished. Her official trials would occur shortly. She would definitely begin service at the beginning of March. The *Baden* steamed only 25 miles; the *Lützow* could do 31. The new vessel *Hindenburg* enters active service simultaneously with the *Baden.*

600 U-Boats; 200 on Active Service.—Submarines are built and repaired day and night in the Voss, Tecklenburg and Urania Dockyards. Most submarines require thorough examination on their return. He estimated that Germany has 200 submarines on active service out of a total of 600 submarines. He deduced this from their numbers. He saw *V-200* (Voss), *T-197* (Tecklenburg) and *U-203* (Urania). The numbers on some submarines were so inscribed that it was difficult to distinguish them in the open sea, but they were clearly visible in port. Every submarine was certainly numbered. Service on board submarines was voluntary. Many of his comrades joined the submarines, hoping for a better life than on board big vessels, but they were bitterly disappointed.

Generally the submarine remains out one month, after which, if it returns, it remains one month docked. Most seamen leaving with a submarine did not expect to return. More submarines had been lost than one dare admit. He knew this because so many of his comrades never returned. Before entering a submarine men had a course of four to six weeks at the submarine school at Kiel. Thence they proceeded to a U-boat division. Many accidents occur even during the trials of new U-boats. It happens repeatedly that a submarine submerges forever during its trial in port.

The latest submarines are 50 meters long (nearly 200 feet) and carry three guns of 8.8 cm. (3.5-inch). The very newest have one 15 cm. (6-inch) gun. Submergence is now very quick—within one minute. Submarines usually travel above water, but submerge entirely as soon as anything is in sight. The periscope closes automatically. After submerging the boat only comes to the surface slowly in order to reconnoitre, but it is very difficult to observe through the periscope. It is generally known that a German submarine once torpedoed a German ship. The matter, however, was kept secret as much as possible.

This German sailor said he deserted because he had had enough of it. The food for the last six months had been wretchedly bad. A whole meal on Sundays consisted of macaroni with plums.

Lützow Sunk by the Germans.—Describing the sinking of the *Lützow* at the battle of Jutland, he said:

"It was 8 o'clock in the evening. We were first hit by a torpedo behind the foremast below the water-line. The torpedo penetrated the walls and exploded within the ship, killing and wounding a great number of men, and destroying the food store. The watertight compartments before the engine room held good, and everything was done to support the bulkhead with the object of preserving the ship. Gradually, however, her condition became hopeless. The staff left the vessel about 10 p. m., the crew remaining on duty. After the staff had been transferred to a torpedo-boat the *Lützow* received another hit, which destroyed the wireless room beneath the bridge. Every one within was killed. Afterward the ship received four severe hits from 15-inch shells. She was now proceeding at only three miles an hour.

"At 3 o'clock in the morning the vessel appeared to be lost, and we were ordered to leave the ship. Four torpedo-boats received 1003 men surviving out of 1600. Three hundred wounded remained on board, whom it was impossible to remove. Our torpedo-boat was not 100 yards from the *Lützow* when it was attacked by five English destroyers and two small cruisers. Our vessel was torpedoed and quickly sank. Three other German torpedo-boats thereupon took us over. Some time afterward the torpedo-boat I was on was hit near the engine room. An order then arrived to retire from further operations by developing smoke. A heavy screen of smoke hid us and the *Lützow* from the English.

"That was our salvation. To save her from falling into English hands we were ordered to sink the *Lützow* with 300 of her own wounded on board. This order was executed. One of our torpedo-boats torpedoed this great German ship, which quickly sank, carrying with it our 300 wounded into the depths. The English then left us in peace, and proceeded in the direction where the *Lützow* had sunk. Apparently they had not seen through the screen of smoke that the *Lützow* had sunk. While they were vainly seeking the ship we escaped and steamed at full power southward for 13 hours. We were then taken over by the small cruiser *Regensburg*, in which we steamed for five hours more before our return at midnight to Wilhelmshaven.

"It is remarkable that all our ships hit in the Jutland battle were hit in the forepart. Many ships were severely damaged while proceeding homeward. All the badly damaged vessels have now been repaired, and new ships are serving, or are shortly to serve, in the fleet. Among the new ships are the *Baden, Bayern* and *Hindenburg*. Shortly also there will be a new *Emden* while a new *Karlsruhe* is already in active service. An *Ersatz Blücher* is on the stocks in Dantzig Dockyard. The *Derfflinger*, which was seriously damaged in the Jutland battle, is again in service. The dockyards are now exclusively constructing submarines and large cruisers, because the greatest losses have been suffered in these types."—*N. Y. Times*, 3/17.

JAPAN

ARMED MERCHANTMEN.—The Nippon Yusen Kaisha has decided to arm its steamers. The list includes 13 regular liners which ply between Japan and Europe and some 13 extra service liners which on the outward voyage go direct to London via Cape of Good Hope and on the homeward trip call at New York and pass through the Panama Canal.—*Shipping Illustrated*, 4/7.

NETHERLANDS

SUBMARINE PURCHASED.—*The Times Weekly* (London) says that Holland has purchased a German interned submarine.

GREAT BRITAIN

STANDARD SHIPS FOR MERCHANT MARINE.—The standard ship now being built in British shipyards to make good the loss of tonnage due to submarine warfare, is of about 8000 tons, and all the ships already laid down are of identical pattern. Eight thousand tons seems to have been hit upon as a middle size between 6000 and 10,000 tons. An 8000-ton ship shares with the 6000-tonner the ability to enter virtually any port—a matter of considerable importance—and it has this advantage over the 10,000-tonner, that for every 40,000 tons built the risk of loss is divided among five ships instead of four. The standardization of a large number of ships will allow of the rolling mills working for long spells without alteration of the machinery, and this will greatly increase the output. The northeast coast engineers have already solved the problem of standardizing the reciprocating engine. There are two opinions about the standardization of the hulls. Some shipbuilders contend strongly that the best and quickest method would be to allow individual yards, or perhaps a group of yards, to standardize their own type of ship. As a matter of fact, shipyards already have what may be called their standardized ship, with which their designers, foremen and workmen are perfectly familiar; and the argument is that, provided the requisite materials were forthcoming—a rather big proviso—the yards would build more quickly when working in the accustomed groove. The opposing argument is based upon the fact that the materials cannot be produced fast enough when the orders received are for sections of varying sizes, and that rapid output is at the moment of supreme importance.—*Shipping Illustrated*, 3/31.

DARDANELLES CAMPAIGN.—*The Times Weekly Edition* (London), under date of March 16, 1917, published the report of the Dardanelles Commission as follows:

The interim report of the Dardanelles Commission, dealing with the origin and inception of the attack in the Western Mediterranean, has been issued. It is signed by the late Lord Cromer, as chairman, and eight of the other nine members of the commission—Mr. Andrew Fisher, Sir Thomas Mackenzie, Sir Frederick Cawley, M. P., Mr. J. A. Clyde, K. C., M. P., Mr. Stephen Gwynn, M. P., Admiral of the Fleet Sir W. H. May, Field Marshal Lord Nicholson and Lord Justice Pickford. The only member of the commission who does not sign the report is Mr. W. F. Roch, M. P., who presents very similar views in a concise and clear memorandum. Mr. Fisher and Sir T. Mackenzie dissent on certain details.

The general conclusions are as follows:

(a) The question of attacking the Dardanelles was, on the invitation of Mr. Churchill, brought under the consideration of the War Council, on November 25, 1914, as "the ideal method" for defending Egypt.

(b) It may reasonably be assumed that, inasmuch as all the authorities concerned were, *prima facie*, in favor of a joint naval and military rather than a purely naval attack, such attack, if undertaken at all, would have been of the former rather than of the latter character had not other circumstances led to a modification of the program.

(c) The communication from the Russian Government on January 2 introduced a fresh element into the case. The British Government considered that something must be done in response to it, and in this connection the question of attacking the Dardanelles was again raised. The Secretary of State for war declared that there were no troops immediately available for operations in the east. This statement was accepted by the War Council, who took no steps to satisfy themselves by reports or estimates as to what troops were available then or in the near future. Had this been done we think that it would have been ascertained that sufficient troops would have been available for a joint naval and military operation at an earlier date than was supposed. But this matter was not adequately investigated by the War Council. Thus the question before the War Council on January 13 was whether no action of any kind should, for the time being, be undertaken, or whether action should be taken by the fleet alone, the navy being held to be the only force available.

(d) The political arguments which were adduced to the War Council in favor of prompt and effective action, if such were practicable, were valid and of the highest importance, but the practicability of whatever action was proposed was of equal importance.

(e) Mr. Churchill appears to have advocated the attack by ships alone before the War Council on a certain amount of half-hearted and hesitating expert opinion, which favored a tentative or progressive scheme, beginning with an attack upon the outer forts. This attack, if successful, was to be followed by further operations against the main defences of the Narrows. There does not appear to have been direct support or direct opposition from the responsible naval and military advisers, Lord Fisher and Sir James Wolfe Murray, as to the practicability of carrying on the operation as approved by the War Council, viz., "To bombard and take the Gallipoli Peninsula, with Constantinople as its objective."

(f) The First Sea Lord and Sir Arthur Wilson, who was the only other naval adviser present at the War Council, expressed no dissent. Lord Kitchener, who occupied a commanding position at the time the decision was taken, was in favor of the project. Both Lord Fisher and Sir Arthur Wilson would have preferred a joint naval and military attack, but they did not express to the War Council and were not asked to express any opinion on the subject, and offered no objection to the naval operations as they considered them experimental and such as could be discontinued if the first results obtained were not satisfactory. Moreover, such objections as they entertained were mainly based on their preference for the adoption of other plans in other theatres of war.

(g) We think that there was an obligation first on the First Lord, secondly on the Prime Minister and thirdly on the other members of the War Council to see that the views of the naval advisers were clearly put before the Council; we also think that the naval advisers should have expressed their views to the Council, whether asked or not, if they considered that the project which the Council was about to adopt was impracticable from a naval point of view.

(h) Looking at the position which existed on January 13, we do not think the War Council were justified in coming to a decision without much fuller investigation of the proposition which had been suggested to them that "the Admiralty should prepare for a naval expedition in February to bombard and take the Gallipoli Peninsula with Constantinople as its objective." We do not consider that the urgency was such as to preclude a short adjournment to enable the naval and military advisers of the government to make a thorough examination of the question. We hold that the possibility of making a surprise amphibious attack on the Gallipoli Peninsula offered such great military and political advantages that it was mistaken and ill-advised to sacrifice this possibility by hastily deciding to undertake a purely naval attack which from its nature could not attain completely the objects set out in the terms of the decision.

(i) We are led to the conclusion that the decision taken on February 16 to mass troops in the neighborhood of the Dardanelles marked a very critical stage of the whole operation. It ought to have been clear at the time that, when this was once done, although the troops might not have been actually landed, it would become apparent to all the world that a really serious attack was intended, and that withdrawal could no longer be effected without running a serious risk of loss of prestige. We consider that at that moment, inasmuch as time was all-important, no compromise was possible between making an immediate and vigorous effort to ensure success at the Dardanelles by a joint naval and military occupation, or falling back on the original intention of desisting from the naval attack if the experiences gained during the bombardment were not satisfactory.

(j) On February 20 Lord Kitchener decided that the 29th division, part of the troops which by the decision of February 16 were to have been sent to the east, should not be sent at that time, and Colonel Fitzgerald by his order instructed the Director of Naval Transports that the transports for that division and the rest of the expeditionary force would not be required. This was done without informing the First Lord, and the dispatch of the troops was thus delayed for three weeks. This delay gravely compromised the probability of success of the original attack made by the land forces, and materially increased the difficulties encountered in the final attack some months later.

(k) We consider that, in view of the opinions expressed by the naval and military authorities on the spot, the decision to abandon the naval attack after the bombardment of March 18 was inevitable.

(l) There was no meeting of the War Council between March 19 and May 14. Meanwhile important land operations were undertaken. We think that before such operations were commenced the War Council should have carefully reconsidered the whole position. In our opinion the Prime Minister ought to have summoned a meeting of the War Council for that purpose, and if not summoned, the other members of the War Council should have pressed for such a meeting. We think this was a serious omission.

(m) We consider that the responsibility of those members of the Cabinet who did not attend the meetings of the War Council was limited to the fact that they delegated their authority to their colleagues who attended those meetings.

(n) We are of opinion that Lord Kitchener did not sufficiently avail himself of the services of his general staff, with the result that more work was undertaken by him than was possible for one man to do, and confusion and want of efficiency resulted.

(o) We are unable to concur in the view set forth by Lord Fisher that it was his duty, if he differed from the chief of his department, to maintain silence at the Council or to resign. We think that the adoption of any such principle generally would impair the efficiency of the public service.

(p) We think that, although the main object was not attained, certain important political advantages, upon the nature of which we have already dwelt, were secured by the Dardanelles expedition. Whether those advantages were worth the loss of life and treasure involved is, and must always remain, a matter of opinion.

THE REPORT

INNER HISTORY OF THE WAR COUNCIL

The period covered by the present report—the period of origin and inception of the Dardenelles expedition—begins on August 4, 1914, and concludes on March 23, 1915, on which day it was definitely decided to abandon the original idea of a naval attack. As a preliminary to the work of the commission there was prepared for it a summary of the proceedings of the War Council in so far as they dealt with the Dardanelles expedition. This was done by Sir Maurice Hankey, who was secretary to the Committee of Imperial Defence and subsequently to the War Council. After this essential preliminary, the commission examined witnesses, all of whom save one occupied official positions. Their evidence was necessarily given in secret, and, "in view of the improbability of the evidence being published at an early date, we have embodied in our report copious extracts." "On the whole," the report reads, "we may state with the utmost confidence that we were furnished with all materials necessary to form a correct and deliberate judgment upon the question upon which Parliament had delegated us to express an opinion."

Lord Kitchener's Death

Two preliminary observations are made. The first is that in the period under review there was a heavy strain thrown on all the departments concerned, and, in the absence of complete written records, the recollection of some witnesses may be obscured. Without casting any imputation on the good faith of witnesses, it is conceivable that they may be to some extent unconsciously influenced by their knowledge of subsequent events.

In the second place, we have to remark that the premature and deeply regretted death of Lord Kitchener naturally renders it impossible for us to state, with the same confidence as that which obtains in the case of living witnesses, whether we have faithfully represented the opinions he entertained and the aims which he had in view at different periods of the proceedings. The difficulty is enhanced owing to the strong opinion which Lord Kitchener entertained as to the absolute necessity of maintaining the strictest secrecy in respect to all matters connected with military operations. Sir Maurice Hankey, indeed, stated that some difficulties at times arose owing to Lord Kitchener's unwillingness to impart full information even to the members of the War Council. We have, however, done all that is possible to ascertain both his views and intentions by closely examining such contemporaneous records as exist and by inquiry from those who were associated with him during his life time. It is, in this connection, singularly unfortunate that that gallant officer, Colonel Fitzgerald, who was Lord Kitchener's personal military secretary, and who was probably better acquainted with his opinions than any other individual, shared the fate of his distinguished chief. We have not thought that we should be justified, in deference to the consideration which is rightly shown to the memory of the illustrious dead, in abstaining from a complete revelation of the action which Lord Kitchener took during the various phases of the events under consideration, nor have we hesitated to express our views on that action. It is necessary to do justice to the living as well as to the dead. Moreover, it must be steadfastly borne in mind that, at the time when the attack on the Dardanelles was under consideration, Lord Kitchener occupied a position such as has probably never been held by any previous Secretary of State for War. The circumstances of the case cannot be understood unless the nature of his position is fully realized. In this connection, we may quote the following passage from the evidence given by Mr. Winston Churchill: "Lord Kitchener's personal qualities and position played at this time a very great part in the decision of events. His prestige and authority were immense. He was the sole mouthpiece of War Office opinion in the War Council. Everyone had the greatest admiration for his character, and everyone felt fortified, amid the terrible and incalculable events of the opening months of the war, by his commanding presence. When he gave a decision it was invariably accepted as final. He was never, to my belief, overruled by the War Council or the Cabinet in any military matter, great or small. No single unit was ever sent or withheld contrary, not merely to his agreement, but to his advice. Scarcely anyone ever ventured to argue with him in Council. Respect for the man, sympathy for him in his immense labors, confidence in his professional judgment, and the belief that he had plans deeper and wider than any we could see, silenced misgivings and disputes, whether in Council or at the War Office. All-powerful, imperturbable, reserved, he dominated absolutely our counsels at this time. If the course of my observations and the documents it is my duty to lay before you appear to constitute any reflection upon his military policy, I wish here to testify to the overwhelming weight of the burdens laid upon him, to his extraordinary courage and patience in all the difficulties and perplexities through which we were passing and to his unvarying kindness to me."

Although, however, we have thought that we should be failing in our duty if we did not deal fully with the part Lord Kitchener played in these transactions, we would ask those who may read this report to remember, in justice to his memory, in the first place, that it has not been possible to check his recorded opinions by the light of subsequent explanation, and, secondly, that if, in the eyes of any critics, he may, under circumstances of very great difficulty, be held to have committed some errors of judgment, the fact cannot in any way obscure the very distinguished services which he rendered to his country in other directions.

Higher Organization

The next two sections of the report are together voluminous. They deal with the higher organization before the outbreak of war and the higher organization adopted subsequently. Before the war, and until nearly the end of November, 1914, the higher direction of military and naval operations was vested in the Cabinet, who were assisted by the Committee of Imperial Defence. The Committee of Imperial Defence was, for all practical purposes, a committee of the Cabinet, with some experts added.

FORMATION OF WAR COUNCIL

A Criticism of Its Methods

The report then explains how and why the War Council was formed on November 25, 1914. The old machinery consisted of the Cabinet, assisted by the Committee of Imperial Defence, with the War Office and Admiralty acting as executive agents.

The Cabinet at that time consisted of 22 members. It must have been obvious from the first that it was far too numerous to control effectively the conduct of the war, more especially by reason of the fact that many of the Ministers presided over departments which, in some cases, were very slightly and, in others, were in no degree concerned with war-like operations. It is to be regretted that this rudimentary fact was not recognized immediately after the outbreak of war. Thus, for four months, during which time events of the utmost importance were occurring, the machinery employed for designing and controlling the higher operations of the war was both clumsy and inefficient. Eventually some improvement was effected. The War Council took the place of the Committee of Imperial Defence.

The composition and functions of the War Council did not materially differ from those of the Committee of Imperial Defence. . . . .

The main change which was effected was, however, in connection with the powers of the Council as compared to those of the Committee of Imperial Defence. Whilst the latter body was in existence, the responsibility for all important decisions remained, theoretically in all, and practically in most cases, with the united Cabinet. The War Council remained, like the Committee of Imperial Defence, a committee of the Cabinet with some experts added. Theoretically, the powers of the united Cabinet remained the same as before. Practically, they underwent a radical change. It was the Council, and not the united Cabinet, which finally decided the most important matters, and gave effect to its decisions without necessarily waiting for any expression of assent or dissent from the Cabinet. The Cabinet appear to have been generally informed of any important decisions which may have been taken by the Council, but not until after the necessary executive steps had been taken to give whole or partial effect to those decisions. This is what actually happened in the case both of the naval and military operations undertaken at the Dardanelles. Further, we have been given to understand that some members of the Cabinet did not wish to be informed of what was going on. . . . . For all practical purposes it may be held that, during the period under review, the powers and prerogatives of the united Cabinet were, in so far as the conduct of the war was concerned, held almost entirely in abeyance.

Individual Responsibility

On the question of the weight of responsibility resting on different members of the Cabinet, the report says:

A distinction has to be made between the real responsibility which devolved on the several Cabinet Ministers who were members of the War

Council. The Chancellor of the Exchequer (Mr. Lloyd George), the Secretary of State for Foreign Affairs (Sir Edward, now Viscount Grey of Fallodon) and the Secretary of State for India (the Marquis of Crewe) exercised undoubted and very legitimate influence, and occasionally stated their opinions, but the main responsibility rested on three members of the Council—namely, the Prime Minister, the Secretary of State for War (Lord Kitchener) and the First Lord of the Admiralty (Mr. Winston Churchill). The latter, in the course of his evidence said: "In the early stages the war was carried on by the Prime Minister, and Lord Kitchener and me, I think, in the next place, but I was on rather a different plane. I had not the same weight or authority as those two Ministers, nor the same power, and if they said, This is to be done or not to be done, that settled it." We believe this description of the actual working of the machine to be substantially correct (Mr. Asquith, however, said that Mr. Churchill's statement required modification), save that Mr. Winston Churchill probably assigned to himself a more unobtrusive part than that which he actually played.

Experts and the Council

The main questions which came under the consideration of the War Council in connection with the Dardanelles were of a highly technical nature, on which the opinions only of those possessed of naval and military knowledge or experience would be of any real value. Therefore, says the commission, it is essential to ascertain what was the precise position assigned to the expert members of the Council. They considered that the best plan was to quote passages from the evidence of the experts and of the Ministers who were members of the Council. This they do *in extenso,* in the case of the Admiralty. The difficulty did not arise in the case of the War Office, as the War Secretary, Lord Kitchener, was himself a distinguished expert. The case of the Admiralty was different. The First Lord, Mr. Churchill, was not himself an expert. Expert naval advice was represented by Lord Fisher (the First Sea Lord) and by Admiral Sir Arthur Wilson. On one important occasion (January 28) Sir Henry Oliver was also present.

The view taken by Lord Fisher of his own position at the War Council may be gathered from the following extract from his evidence:

"The Chairman. I should like you to explain why you thought that at the War Council there were only two alternatives before you, one to yield your opinion absolutely and the other to resign. You were a consultative body. Is it possible to carry on business with a consultative body on such a basis as that? A. I can make it clear to you. The War Council only consisted of the Cabinet Ministers. We were not members of the War Council. I was not a member of the War Council, nor was Sir Arthur Wilson, nor Sir James Wolfe Murray (the chief of the Imperial General Staff). It is a mistake to call us members of the War Council—it was no such thing. We were the experts there who were to open our mouths when told to.

"Q. Nothing else? A. Nothing else.

"Q. And you did not consider yourselves members of the War Council? A. Absolutely not. The members of the Cabinet were members of the Council, and the others were simply there ready to answer questions if asked.

"Q. And they never were asked? A. They were sometimes, because I was asked how many battleships would be lost, and I said 12.

"Q. But they were never asked anything about the Dardanelles? A. No."

Sir Arthur Wilson's evidence shows that the view which he took of his position was generally identical with that entertained by Lord Fisher. Generally, the civil members of the War Council—Mr. Winston Churchill, Lord Grey, Mr. Balfour, Lord Haldane, Lord Crewe and Mr. Lloyd George —dissented from this view. Mr. Balfour made this qualification. He thought the task of the experts ought to be facilitated by the Cabinet Ministers present, the heads of their departments or the Cabinet Minister in the chair, asking them. Lord Crewe, in his evidence, said that the political members of the committee did too much of the talking, and the expert members, as a rule, too little. Sir Maurice Hankey took the ministerial view.

Of the procedure of the War Council the report draws attention to the fact that the evidence as to whether the decisions were read out or understood is contradictory.

War Council Conclusions

The following are the conclusions to be drawn from the evidence which we have received as to the proceedings of the War Council:

1. It was not the practice to ask the experts attending the Council to express their opinions.
2. The experts themselves did not consider it their duty either to express any opinions unless they were asked to do so, or to intimate dissent, at the Council board, if they disagreed with the views set forth by the Ministers in charge of their respective departments.
3. The chairman and the ministerial members of the War Council looked to the naval and military experts to express their opinions if they dissented from the views put forward by the heads of their respective departments. As the experts did not express their opinions the Council was in technical matters guided wholly by the views laid before them by the Secretary of State for War and the First Lord of the Admiralty.
4. The functions of the experts were, to a great extent, differently understood by the experts themselves and the ministerial members of the Council.

ADMIRALTY AND WAR OFFICE

Change in Methods of Business

In addition to the changes in the Committee of Imperial Defence, the war brought also important alterations in the methods of conducting business at the Admiralty and the War Office. Immediately after the outbreak of war, while Prince Louis was still First Sea Lord, a war staff group was formed at the Admiralty, which, at Lord Fisher's instance, was "greatly strengthened" in November, 1914. It consisted of the First Lord, the First Sea Lord, the Chief of the Staff (Admiral Oliver), Admiral Sir Arthur Wilson, the Secretary of the Board (Sir Graham Greene), and the Naval Secretary (Commodore de Bartolomé). The Second Sea Lord, who was previously included in the war staff group, ceased to be a member. The creation of the group tended to diminish the authority and to minimize the collective activity of the Board of Admiralty.

The report proceeds:

There can, indeed, be no doubt that, at the commencement of the war, the Junior Sea Lords resented the position in which they were placed. None of them were consulted about the Dardanelles expedition.

The Second Sea Lord, Sir Frederick Hamilton, though generally of opinion that the Board of Admiralty had "a right to give their views on large matters of policy," did not complain of the treatment the board received in the special case of the Dardanelles. He considered that that was "a matter for the Cabinet to decide." The Third Sea Lord (Rear Admiral Tudor) said that the only opportunity he had of expressing an opinion on the subject was in the course of an informal conversation with Mr. Churchill. He added that his action "was not welcomed and it had no effect."

The Fourth Sea Lord (Commodore Lambert) testified to the fact that the board had not been consulted about the Dardanelles expedition, and expressed an opinion that "it would have been a wise and proper subject for the board's discussion."

On November 22, 1915, the Junior Sea Lords addressed collectively a minute to the present First Lord (Mr. Arthur Balfour), in which they said: "The principle on which the Order in Council is based that the supremacy of the First Lord is complete and unassailable has been pushed too far and has tended to imperil and at some future time may again tend to imperil national safety."

It should be added that in answer to a minute addressed to him by the Junior Lords on May 18, Mr. Churchill wrote:

"I agree that the four Sea Lords should be more fully consulted on large questions of war policy as apart from the day to day conduct of the war, where action must proceed easily and rapidly. But neither Prince Louis of Battenberg nor Lord Fisher were in favor of this practice, considering that war plans and war policy lay wholly in the domain of the First Sea Lord, with the First Lord directly over him exercising supreme executive power. It would appear desirable in future that the war situation should be reviewed each week by the naval members of the board under the Presidency of the First Lord."

The individual members of the board were not kept well informed of passing events. They were not consulted before the naval attack on the Dardanelles was made. It is clear that Mr. Asquith was ill informed as regards the methods under which Admiralty business was conducted when he stated to the commission that the members of the War Council "were entitled to assume" that any view laid before them by the First Lord of the Admiralty "was the considered opinion of the Board of Admiralty as a whole."

War Office Organization

Speaking of the organization of the War Office, the commission arrived at the following conclusions:

As regards administrative methods, we think it is much to be regretted that the principles of the devolution of authority and responsibility upon which the War Office system was based were ignored by Lord Kitchener. All the evidence laid before us points to the conclusion that Lord Kitchener was not in the habit of consulting his subordinates, that he frequently gave orders over the heads of the chiefs of departments and sometimes without the knowledge of the chief of the general staff, and, in fact, that he centralized the whole administration of the War Office in his own hands. Sir James Murray stated that that portion of the Field Service Regulations which deals with the duties of the chief of the general staff were "practically non-existent." On being asked whether he considered that Lord Kitchener centralized too much authority in his own person, he replied, "Yes, I do undoubtedly," and he added that the excessive centralization of which he complained "was due not to the system, but to the personality of the individual who was Secretary of State."

General Callwell, the director of military operations, stated that "the real reason why the general staff practically ceased to exist was because it was not consulted." He added that, so far as he was aware, Lord Kitchener never "conferred with anyone very much." General Callwell considered that the extreme centralization practised "did not tend to the smooth working of the machine."

At a later period of the war, an Order in Council was issued restoring the power of the Chief of the Imperial General Staff which had been allowed to lapse. Sir Reginald Brade, on being asked why this order was issued, replied, "I think the idea was that Lord Kitchener was in the habit of sending on his own orders in regard to operations, and that he did not ask, or disregarded, the advice of the officers of the general staff. I think that was the object of it. I do not say that was the fact, but that was understood to be what happened—why that Order in Council was passed."

There can, in fact, be no doubt that the principle of centralization was pushed to an extreme point by Lord Kitchener. It proved eminently successful during the minor operations in the Sudan, which he conducted with conspicuous skill. But it was unsuitable to a stronger force than that which Lord Kitchener commanded in the Sudan or to operations on so large a scale as those in which this country has recently been engaged. Its result was to throw on the hands of one man an amount of work with which no individual, however capable, could hope to cope successfully.

NARRATIVE OF EVENTS

Preliminary Discussions on the Campaign

The fourth section of the report is a narrative of events with comments. It has long been recognized by the naval and military authorities that any attack on the Dardanelles would be an operation of great difficulty.

On October 31 Turkey declared war. On November 3 the outer forts of the Dardanelles were bombarded for about 10 minutes. Sir Henry Jackson has expressed the opinion, with which the commissioners concur, that this bombardment was a mistake, as it was calculated to put the enemy on the alert. The narrative proceeds:

On November 25, the idea of making a serious attack on the Dardanelles was discussed at a meeting of the War Council. Mr. Churchill said that the best way to defend Egypt was to make an attack on some part of the coast of Asiatic Turkey, and, as an extension of this idea, he suggested an attack on the Gallipoli Peninsula, which, if successful, would give us the control of the Dardanelles and enable us to dictate terms at Constantinople. He added that this would be a very difficult operation and would require a large force. Lord Kitchener agreed that it might become necessary to make a diversion by an attack on the Turkish communications, but considered that the moment had not yet arrived for doing so.

Russia's Request

On January 2, 1915, a very important telegram, which materially affected the situation, was received from the Ambassador at Petrograd. It was represented that the Russians were hard pressed in the Caucasus, and a hope was expressed that a demonstration against the Turks would be made in some other quarter. On the following day a reply was sent from the Foreign Office, but drafted at the War Office, that a demonstration would be made against the Turks, but stating that it was feared that any such action would be unlikely seriously to affect the withdrawal of enemy troops in the Caucasus. Mr. Churchill thinks that Lord Kitchener's reply was the outcome of a conversation he had with him. On January 2 Mr. Churchill received the following private letter from Lord Kitchener:

"I do not see that we can do anything that will seriously help the Russians in the Caucasus. The Turks are evidently withdrawing most of their troops from Adrianople and using them to reinforce their army against Russia, probably sending them by the Black Sea. . . . . We have no troops to land anywhere. . . . . The only place that a demonstration might have some effect in stopping reinforcements going east would be the Dardanelles. . . . . We shall not be ready for anything big for some months."

The Purely Naval Attack

Here the commissioners interrupt the thread of the narrative to inquire who was primarily responsible for originating the proposal to make a purely naval attack on the Dardanelles.

In considering this question, it has to be remembered that Mr. Churchill himself, in common with all the experts who were consulted at the time, as well as those who gave their opinions subsequently, was greatly in favor of a joint naval and military attack rather than one conducted by ships alone. Lord Fisher, in giving his evidence, spoke of the "purely naval operation at the Dardanelles" as "Lord Kitchener's proposal," and condemned it in strong terms. He based this opinion on Lord Kitchener's letter to Mr. Churchill of January 2, quoted in the preceding paragraph. We are unable to concur in Lord Fisher's view. Lord Kitchener suggested and pressed for a demonstration, but that did not necessarily involve a deliberate attempt to force a passage. The proper conclusion seems to be that when a demonstration appeared to be necessary the First Lord thought it was possible to convert and extend that demonstration into an attempt to force a passage, and took the steps which are detailed in the immediately succeeding paragraph.

On a review of the whole of the evidence on this point, a fairly safe conjecture may be made of what was passing through Lord Kitchener's mind early in January. It has to be borne in mind that the question which both Lord Kitchener and the government generally had to decide was not whether the attack on the Dardanelles should be amphibious or purely naval, but whether, owing to the impossibility of supplying an adequate military force (Lord Kitchener estimated, on January 13, that 150,000 men would be required), any attack at all should be undertaken, or whether, on the other hand, the operation should be limited to a mere demonstration. Lord Kitchener was, without doubt, strongly impressed with both the military and political necessity of acting on the appeal made by the Russian Government. The new army he was creating was not yet ready. He had to provide for home defence, to which he attached the utmost importance. He was most unwilling to withdraw a single man from France. The views entertained by Mr. Churchill at the time as to the prospects of success of a purely naval operation, were, as we shall presently show, somewhat more optimistic than was warranted by the opinions of the experts. Under these circumstances, Lord Kitchener grasped, perhaps rather too eagerly, at the proposal to act through the agency of the fleet alone, though he recognized the objections to any such undertaking, but it cannot with justice or accuracy be said that the responsibility for proposing the adoption of this course rested with him. It rested rather on the First Lord.

Transactions with Admiral Carden

The report then resumes the narrative of events:

On January 3, 1915, the following telegram was dispatched from the Admiralty to Vice Admiral Carden:

"Do you think that it is a practicable operation to force the Dardanelles by the use of ships alone? It is assumed that older battleships would be employed, that they would be furnished with mine sweepers, and that they would be preceded by colliers or other merchant vessels as sweepers and bumpers. The importance of the results would justify severe loss. Let me know what your views are."

On January 5, Vice Admiral Carden replied to the Admiralty telegram of the 3d, in the following terms:

"I do not think that the Dardanelles can be rushed, but they might be forced by extended operations with a large number of ships."

On January 6, the following telegram was sent from the First Lord to Vice Admiral Carden:

"High authorities here concur in your opinion.

"Forward detailed particulars showing what force would be required for extended operations. How do you think it should be employed, and what results could be gained?"

The wording of this telegram is certainly open to criticism. We shall deal presently with the views entertained by the various authorities at the Admiralty. Here we need only remark that at the time Lord Fisher was by the highest naval authority at the Admiralty, and that, in the absence of any explicit statement to the contrary, Vice Admiral Carden would naturally suppose that he was included amongst those who concurred in the view set forth in his telegram of January 5. This, in fact, is what actually happened.

A Scheme Outlined

On January 11, Vice Admiral Carden replied to the telegram sent to him from the Admiralty on the 6th. Four operations, he said, were possible. These were:

(a) The destruction of defences at the entrance to the Dardanelles.

(b) Action inside the Straits, so as to clear the defences up to and including Cephez Point battery N. 8.

(c) Destruction of defences of the Narrows.

(d) Sweeping of a clear channel through the mine-field and advance through the Narrows, followed by a reduction of the forts further up, and advance into the Sea of Marmora.

He estimated that it would take a month to carry out all these operations.

This telegram, Mr. Churchill informed us, "made a great impression on every one who saw it. It was in its details an entirely novel proposition." We understand that the novelty of the proposition consisted in the abandonmen of any attempt to rush the Dardanelles, and in the substitution in its place of a scheme by which the forts would be methodically attacked and destroyed one by one. "That, of course," Mr. Churchill said, "squared with the impression produced in many people's minds by the destruction of the strong forts on land by the German heavy artillery."

On January 15, Sir Henry Jackson recorded his opinion on Admiral Carden's proposal. His memorandum began with the following remark: "Concur generally in his plans." After dealing at some length with the detailed proposals, Sir Henry Jackson concluded by saying: "I would suggest (a) might be approved at once, as the experience gained would be useful." He did not recommend the undertaking of (c) and (d) unless the experience gained from (a) and (b) justified it. It will be observed that this memorandum is dated January 15, that is to say, two days after the meeting of the War Council on January 13, to which we shall presently allude.

Sir Henry Jackson insisted strongly in the evidence which he gave before us that, in writing his memorandum of January 15, he agreed to an attack on the outer forts and nothing more. He did not consider that an attempt made by the fleet alone to get through the Dardanelles was "a feasible operation." He thought that "it would be mad thing to do." He denied the accuracy of the statement made by Mr. Churchill that he, Sir Henry Oliver and Vice Admiral Carden, "were all agreed." He thought that Mr. Churchill was "very much more sanguine" than they were. But nothing of this sort was put on record at the time. The concurrence expressed by Sir Henry Jackson in his memorandum of January 15 with the whole of Vice Admiral Carden's plans is unqualified save by the expression of an opinion that only the first item of the program, viz., that which involved the destruction of the outer forts, should be approved at once, with a view to gaining experience. The explanation of Sir Henry Jackson's reticent attitude is probably to be found in the answer which he gave to a question addressed to him by Mr. Fisher to the effect that it was not part of his duty to "unduly interfere with the naval policy except if he were invited to do so by some superior."

Sir Henry Oliver would greatly have preferred to wait until the army was ready, when a joint naval and military attack might have been made. But he, nevertheless, acquiesced in the naval attack. . . . . As regards the other members of the Admiralty staff who were consulted, all would have preferred a joint naval and military attack, but none dissented from the bombardment of the outer forts.

WAR COUNCIL—JANUARY 13

Lord Fisher's Position

At the time of the important meeting of the War Council on January 13 the situation was such that the British Government had to consider in what direction a blow could most effectively be delivered to relieve the pressure on Russia and to deter Bulgaria from active adherence to the cause of the Central Powers. For various reasons, all save the proposal to make an attempt on the Dardanelles were rejected. The "advantages were so great that they may possibly have produced a tendency on the part of the members of the War Council to be governed by them to an excessive degree, and to neglect unduly the sole question which was really open to discussion, namely, the advisability of undertaking at that time a purely naval enterprise."

The question (says the report) was obviously one on which only the opinions expressed by naval and military experts would be of value, and it then proceeds to ascertain how far these expert opinions were expressed. At the meeting Mr. Churchill explained Admiral Carden's plan for demolishing the forts, which he said was based on the fact that the forts were mainly armed by old guns which would be outranged by the guns of the ships. He gave the names of the ships, including the *Queen Elizabeth,* which could be used. He concluded, according to Sir Maurice Hankey's notes of the proceedings:

"The Admiralty were studying the question, and believed that a plan could be made for systematically reducing all the forts within a few weeks. Once the forts were reduced the mine-fields would be cleared, and the fleet would proceed up to Constantinople and destroy the *Goeben.* They would have nothing to fear from field guns or rifles, which would be merely an inconvenience."

Sir Maurice Hankey then records:

"Lord Kitchener thought the plan was worth trying. We could leave off the bombardment if it did not prove effective."

Lord Fisher said nothing, but it is essential to inquire fully as to what views he really entertained at this moment. He occupied a position of great responsibility. It is highly probable that if either Lord Kitchener or Lord Fisher had, from the first, expressed, on technical grounds, strong objections to the attack on the Dardanelles, the project would have been abandoned, and it may be regarded as quite certain that, under this hypothesis, the plan would have been much more carefully examined than appears to have been the case. . . . .

Lord Fisher made a very full statement to us of the views which he entertained. Mr. Churchill also dwelt at length on this subject, and allusion has been made to it by many other witnesses. We think that we can now confidently describe the attitude he assumed both on January 13 and at later periods. It is certain that Lord Fisher did not underrate the importance of the Dardanelles enterprise. On January 3, in a "private and personal" letter to Mr. Churchill, Lord Fisher said: "I consider the attack on Turkey holds the field." He then sketched out the broad outlines of a general plan of operations in the eastern theatre of war. This plan involved, *inter alia,* the withdrawal of a considerable force from France, and was, therefore, at all events for the time being, incapable of execution. Lord Fisher, in fact, like all other experts, both naval and military, was in favor of a combined attack, but not of action by the fleet alone. It is certain that, from the very first, he disliked the purely naval operation, but it is especially to be observed that his main objection was not based upon the impracticability of the scheme, considered on its own merits, but on the strong opinion which he entertained that the British fleet could be better employed elsewhere. All the evidence we have received, including that of Lord Fisher himself, tends to confirm the perfect accuracy of the following statement made to us by Mr. Asquith:

"As I understand, because I had frequent conversations with him, Lord Fisher's objection to the Dardanelles operations was not so much a technical objection upon naval grounds. It is quite true that, I think throughout, he thought the best chance of success for such an operation would have been a combined operation in which both the land and sea forces were engaged; but Lord Fisher's main objection, at least the one he always impressed on me, was not based in any degree upon the technical or naval merits or demerits of the Dardanelles operations, but upon the fact that he preferred another objective. . . . So far as I understood, from all the conversations I had with him, it was much more upon that ground than upon any specific objection on what you may call technical naval grounds that he was opposed to it."

We have already mentioned that in our present report we proposed only to deal with events which occurred up to March 23, but it may be advisable so far to forestall the contents of our future report as to say that throughout the whole of the proceedings Lord Fisher consistently maintained the attitude described in the above extract from Mr. Asquith's evidence. He reluctantly acquiesced in the Dardanelles operations so long as he thought they would not seriously interfere with the plans which he wished to carry into execution elsewhere. But when in the month of May he became convinced that the demands made on the fleet for action in the Dardanelles would prejudice his alternative schemes, he resigned his post at the Admiralty. It should be clearly understood that his resignation was due solely to this cause and not to objections he entertained to the original scheme for attacking the Dardanelles considered exclusively on its own merits.

Mr. Churchill and Lord Fisher

Mr. Churchill said his impression was that in what he said at the meeting of January 13 he carried with him the full agreement of those who were there. The report says that it is perhaps overstating the case to say that Lord Fisher was in "full agreement," but at the same time points out the following facts:

On January 12, Lord Fisher initialled and passed on to the chief of the staff the following minute, which had been written by the First Lord: "Secret. Minute by the First Lord to Secretary, First Sea Lord, Chief of Staff. The forcing of the Dardanelles as proposed and the arrival of a squadron strong enough to defeat the Turkish fleet in the Sea of Marmora would be victory of first importance and change to our advantage the whole situation of the war in the east. It would appear possible to provide the force required by Admiral Carden without weakening the margin necessary in home waters, as follows." The details connected with the proposed movements of ships were then given. Moreover, on January 14, Lord Fisher concurred with a memorandum which was sent from the First Lord to the Prime Minister in which the following passage occurs: "The attack on the Dardanelles will require practically our whole available margin. If that attack opens prosperously it will very soon attract to itself the whole attention of the eastern theatre, and if it succeeds it will produce results which will undoubtedly influence every Mediterranean power. In these circumstances we strongly advise . . . . that we should devote ourselves to action in accordance with the third conclusion of the War Council, viz., the methodical forcing of the Dardanelles."

The Actual Decision

The actual decision arrived at by the War Council on January 13, after hearing the views expressed by Lord Kitchener and Mr. Churchill—Lord Fisher, Sir Arthur Wilson and Sir James Murray remaining silent—was couched in the following terms:

"The Admiralty should prepare for a naval expedition in February to bombard and take the Gallipoli Peninsula, with Constantinople as its objective."

It is impossible to read all the evidence, or to study the voluminous papers which have been submitted to us, without being struck with the atmosphere of vagueness and want of precision which seems to have characterized the proceedings of the War Council. We have already mentioned that some of those present at the meetings of the Council left without having any very clear idea of what had or had not been decided. The decision of the Council, taken on January 13, is another case in point. The Admiralty was to "prepare" for a naval expedition and nothing more. It would naturally be inferred from the wording of the decision that the matter was to be reconsidered by the Council when the preparations were complete, and after the Admiralty plan was matured. Actual approval of the bombardment was withheld. The following extract from the evidence given by Mr. Asquith will show that this is the way in which he understood the decision:

"The Chairman. Did you understand that it was merely provisional, to prepare, but nothing more? It did not pledge you to anything more? A. No.

"Q. You did not think it approved it? A. No. I think all of us thought this was a very promising operation, and the Admiralty ought to get ready for it.

"Q. But nothing more? A. No, no more than that."

Mr. Churchill apparently considered that the decision of January 13 went further than the approval of mere preparation. . . . . The statement made by Lord Crewe probably represents with accuracy the manner in which the decision was generally understood by the members of the Council. "I think," he said, in answer to a question which was addressed to him, "I should say that it was approved subject to the occurrence of any unforeseen event which might have made it from one point of view unnecessary."

WAR COUNCIL—JANUARY 28

A Discussion on the Proposed Attack

Then follows the story of the second important meeting of the War Council on January 28.

Shortly after the meeting of January 13, Lord Fisher's attitude underwent some change. The real divergence between his views and those of Mr. Churchill became more apparent than heretofore. The latter thus describes what occurred: "During the weeks that followed I could see that Lord Fisher was increasingly worried about the Dardanelles situation. He reproached himself for having agreed to begin the operation. Now it was going to broaden out into a far larger and far longer undertaking than he had contemplated, his great wish became to put a stop to the whole thing. Although our relations continued to be friendly and pleasant, it was clear to me that there was a change. Although we agreed on every definite practical step that had to be taken, there was a deep difference in our underlying view. He knew that I wanted the fleet to carry out its plan in its integrity. I knew that he wanted to break off the whole operation and come away." . . . .

These differences eventually culminated in the submission by Lord Fisher direct to the Prime Minister on January 25 of a memorandum setting forth his views. It is an interesting and, in many respects, important paper. But it has no very direct bearing on the immediate subject of our inquiry. . . .

It appears that subsequent to the submission of this memorandum, Lord Fisher intimated that he did not wish to attend any more meetings of the War Council. The Prime Minister was extremely desirous that Lord Fisher should not absent himself from the meeting which was about to take place. It was arranged, therefore, that, prior to the official meeting on January 28, Lord Fisher and Mr. Churchill should meet in the Prime Minister's room and discuss the matter with him. Save in respect to some points of slight importance as regards the precise language used, the accounts given to us by Mr. Asquith and Lord Fisher, as regards what occurred at this private meeting, tally. Mr. Churchill advocated the attack on the Dardanelles. Lord Fisher spoke in favor of those alternative schemes, which we have not thought it advisable to describe, but to which we have already alluded. He did not criticize the attack on the Gallipoli Peninsula on its own merits. Neither did he mention to the Prime Minister that he had any thought of resigning if his opinions were overruled. The Prime Minister, after hearing both sides, expressed his concurrence in Mr. Churchill's views. Immediately afterwards, the War Council met at 11.30 a. m.

Sir Maurice Hankey's record of this meeting, in so far as it concerns the subject of our inquiry, is as follows:

"Mr. Churchill said that he had communicated to the Grand Duke Nicholas and to the French Admiralty the project for a naval attack on the Dardanelles. The Grand Duke had replied with enthusiasm, and believed that this might assist him. The French Admiralty had also sent a favorable reply, and had promised co-operation. Preparations were in hand for commencing about the middle of February. He asked if the War Council attached importance to this operation, which undoubtedly involved some risks.

"Lord Fisher said that he had understood that this question would not be raised to-day. The Prime Minister was well aware of his own views in regard to it.

"The Prime Minister said that, in view of the steps which had already been taken, the question could not well be left in abeyance.

"Lord Kitchener considered the naval attack to be vitally important. If successful, its effect would be equivalent to that of a successful campaign fought with the new armies. One merit of the scheme was that if satisfactory progress was not made, the attack could be broken off."

Mr. Balfour then dwelt on the advantages which would accrue from a successful attack on the Dardanelles, and concluded by saying that "it was difficult to imagine a more helpful operation."

"Sir Edward Grey said it would also finally settle the attitude of Bulgaria and the whole of the Balkans.

"Mr. Churchill said that the naval commander-in-chief of the Mediterranean had expressed his belief that it could be done. He required from three weeks to a month to accomplish it. The necessary ships were already on their way to the Dardanelles."

It is to be observed that the memorandum addressed by Lord Fisher to the Prime Minister on January 25 was not in the hands of the War Council when this meeting took place, neither were they informed of the conversation between the Prime Minister, Lord Fisher and Mr. Churchill which immediately preceded the meeting. The result, coupled with Lord Fisher's silence, was that the members of the War Council, although they may have had some rather vague idea that Lord Fisher was not in agreement with the First Lord, were by no means well informed of his views. Lord Fisher has explained to us the reasons of his silence. He "did not want to have an altercation with his chief at the Council." Mr. Churchill, he said, "was my chief, and it was silence or resignation." When asked what he meant by stating to the Council that "he had understood that the (Dardanelles) question would not be raised to-day," he replied: "I thought we would have time to think over it. I did not think that it would be gone on with at the meeting." When Lord Fisher found that he was mistaken in this opinion and that a final decision was at once to be taken, he was greatly dissatisfied. He rose from his seat with the intention of going to the room of Mr. Bonham Carter, the Prime Minister's private secretary, and intimating his intention to resign. Lord Kitchener at the same time rose from his seat, and, before Lord Fisher could leave the room, had some private conversation with him at the window. He strongly urged Lord Fisher not to resign, and pointed out that he was the only one present who disagreed with the Dardanelles operation. Eventually, according to a note Lord Fisher made at the time, the latter "reluctantly gave in to Lord Kitchener's entreaty and resumed his seat."

During all these proceedings, Sir Arthur Wilson, for reasons very analogous to those which inspired Lord Fisher's attitude, remained silent.

A Second Meeting

There was a second meeting of the War Council on January 28, and between the two meetings Mr. Churchill sought an interview with Lord Fisher. Mr. Churchill says:

"I strongly urged him to undertake the operation, and he definitely consented to do so. I state this positively. We then repaired to the afternoon War Council meeting, Admiral Oliver, the chief of the staff, coming with us, and I announced finally on behalf of the Admiralty and with the agreement of Lord Fisher that we had decided to undertake the task with which the War Council had charged us so urgently.

"This I take as the point of final decision. After it, I never looked back. We had left the region of discussion and consultation, of balancings and misgivings. The matter had passed into the domain of action."

Thus the third phase of these transactions was reached. There was no longer, as on January 13, any question of "preparing" for an attack on the Dardanelles. It was finally decided that an attack should be made, by the fleet alone, with Constantinople as its ultimate objective.

We wish to add some comments on these proceedings. Both Lord Fisher and Sir Arthur Wilson are distinguished officers who, in the course of their honorable careers, have rendered eminent services to their country. We have not the least doubt that the attitude which they adopted at the War Council was dictated by a strong sense of duty. But we have no hesitation in recording our opinion that it was a mistaken sense of duty. Lord Fisher, indeed, himself recognized that he "stretched loyalty to an extreme pitch." . . . . Both of these officers were distinguished experts. They must have been aware that the questions which the Council had to decide were of so technical a nature that none but expert opinion could be of any value, and they must also have been aware that none of the ministerial members of the Council had any expert naval knowledge. We hold, therefore, that although they were not asked definitely to express their opinions, they should have done so. . . .

Mr. Churchill's Conduct

On Mr. Churchill's conduct the commissioners say:

He ought, instead of urging Lord Fisher, as he seems to have done at the private meeting after luncheon on January 28, to give a silent, but manifestly very reluctant, assent to the undertaking, not merely to have invited Lord Fisher and Sir Arthur Wilson to express their views freely to the Council, but further to have insisted on their doing so, in order that the ministerial members might be placed in full possession of all the arguments for and against the enterprise. We have not the least doubt that, in speaking at the Council, Mr. Churchill thought that he was correctly representing the collective views of the Admiralty experts. But, without in any way wishing to impugn his good faith, it seems clear that he was carried away by his sanguine temperament and his firm belief in the success of the undertaking which he advocated. Although none of his expert advisers absolutely expressed dissent, all the evidence laid before us leads us to the conclusion that Mr. Churchill had obtained their support to a less extent than he himself imagined.

Mr. Asquith's Position

Further, we are very clearly of opinion that the other members of the Council, and more especially the chairman, should have encouraged the experts present to give their opinion, and, indeed, should have insisted upon their doing so; and, moreover, that if the latter had expressed any doubts a short adjournment should have taken place, in order to allow the matter to be further considered, possibly by the light of what other experts, not having seats on the Council, might have to say. It was common knowledge that naval opinion generally condemned the attack on forts by ships unaided by any military force. The Prime Minister was himself aware of this fact. Such being the case, it would appear that special care should have been taken to elicit a full expression of the opinions entertained by the experts, and that they should have been urged to state them in their own way. What actually happened was that the stress laid upon the unquestionable advantages which would accrue from success was so great that the disadvantages which would arise in the not improbable case of failure were insufficiently considered.

A CHANGE OF OUTLOOK

Necessity of Military Co-operation

After the meeting of January 28 the necessity for employing a large military force became daily more apparent. The idea of a purely naval operation was gradually dropped. The prestige argument grew in importance. It does not appear that either the Cabinet or the War Council ever deliberately discussed and deliberately changed the policy. General Caldwell says: "We drifted into the big military attack." There appears to be some reason for supposing that Lord Kitchener realized from the first that the aid of the army would eventually be necessary.

On February 16 a very important informal meeting of ministers was held. Owing to events in Egypt and to changes in plans in the west, it was decided to mass a considerable force in the Mediterranean to be used as occasion might require. The decisions, which were eventually incorporated with those of the War Council, were as follows:

"1. The XXIXth division, hitherto intended to form part of Sir John French's army, to be dispatched to Lemnos at the earliest possible date. It is hoped that it may be able to sail within nine or ten days.

"2. Arrangements to be made for a force to be dispatched from Egypt, if required.

"3. The whole of the above forces, in conjunction with the battalions of Royal Marines already dispatched, to be available in case of necessity to support the naval attack on the Dardanelles.

"4. Horse-boats to be taken out with the XXIXth division, and the Admiralty to make arrangements to collect small craft, tugs, and lighters in the Levant.

"5. The Admiralty to build special transports and lighters suitable for the conveyance and landing of a force of 50,000 men at any point where they may be required."

Sir Maurice Hankey states that this was "the all-important decision from which sprang the joint naval and military enterprise against the Gallipoli Peninsula." This decision may, in fact, be regarded as the fourth phase of the transactions. It had not been definitely decided to use troops on a large scale, but they were to be massed so as to be in readiness should their assistance be required.

LORD KITCHENER'S VIEW

The Argument of Prestige

"Acute discussions" took place at the War Council on February 19 (the day on which the first bombardment took place), February 24 and 26. It was in the course of these days that the views of Lord Kitchener, "who was in reality the leading spirit of the triumvirate which was conducting the war," underwent a considerable change. The possibility of breaking off the attack on the Dardanelles had altogether disappeared from the purview of the responsible authorities by the middle of February.

At the meeting on the 24th, Lord Kitchener said that he "felt that if the fleet would not get through the Straits unaided, the army ought to see the business through. The effect of a defeat in the Orient would be very serious. There could be no going back. The publicity of the announcement had committed us." Lord Grey said that "failure would be morally equivalent to a great defeat on land." . . . . The scope of the intended military operations was left in doubt. Lord Kitchener and others still clung to the idea that success was attainable by naval action alone. In the course of the discussion on February 24 he asked Mr. Churchill whether he "contemplated a land attack." The latter said, in reply, that "he did not, but it was quite conceivable that the naval attack might be temporarily held up by mines, and some local military operation required." The telegrams sent from the War Office give some indication of what was passing in Lord Kitchener's mind at this time. On February 23, he sent through Sir John Maxwell, who was in Egypt, instructions to General Birdwood, who was about to proceed to the Dardanelles, to report, "whether it is considered by the admiral that it will be necessary for troops to be employed to take the forts, and, if so, what force will be necessary; whether a landing force will be required of the troops to take the forts in reverse, and generally in what manner it is proposed to employ the troops." On February 24, he telegraphed to Sir John Maxwell: "It is proposed that the navy should silence the guns and destroy the forts with gun fire. It is not intended that parties should be landed on the Gallipoli Peninsula, except under cover of the naval guns, to help in total demolition when the ships get to close quarters." On February 26, Sir John Maxwell telegraphed that the French officer, who had formerly been military attaché at Constantinople, thought that "a military expedition is essential for opening the Dardanelles passage to the Allied fleet, and it would be extremely hazardous to land on the Gallipoli Peninsula, as the peninsula is very strongly organized for defence." On the evening of the same day, Lord Kitchener telegraphed to General Birdwood through Sir John Maxwell: "The forcing of the Dardanelles is being undertaken by the navy, and as far as can be foreseen at present the task of your troops, until such time as the passage has actually been secured, will be limited to minor operations, such as final destruction of batteries, after they have been silenced, under the covering fire of the battleships. It is possible, however, that howitzer batteries may be concealed inland with which the ships cannot deal effectively, and, if called upon by Admiral Carden, you might have to undertake special minor operations from within the Straits for dealing with these. Remember, however, that there are large enemy military forces stationed on both sides of the Straits, and you should not commit yourself to any enterprise of this class without aerial reconnaissance and assurance of ample covering fire by the fleet. At any time during the bombardment of the Dardanelles you can, of course, apply for and obtain any additional forces from your corps in Egypt that you may require up to the total of its strength."

Delay of XXIXth Division

In the meanwhile, the Admiralty, in accordance with the decision arrived at on February 16, had been preparing transports to convey the XXIXth division to the Mediterranean. It was calculated that their departure would commence on the 22d. On the 20th, however, Colonel Fitzgerald, Lord Kitchener's personal military secretary, called at the Admiralty and stated that it had been decided that the XXIXth division were not to go. This decision led to an acute difference of opinion between Lord Kitchener and Mr. Churchill. The discussions on the subject at the meetings of the War Council on February 24 and 26 were animated. Mr. Churchill made "the strongest possible appeal" for the immediate dispatch of the XXIXth division. He formerly recorded his dissent at the division being retained in this country, and added that he "must disclaim all responsibility if disaster occurred in Turkey owing to the insufficiency of troops." Lord Kitchener, on the other hand, held that the naval division and marines, together with the Australians and New Zealanders, whom it was proposed to bring from Egypt, constituted an adequate force, and that the 33,000 men available from the XXIXth division and a territorial division which it was proposed to send from home would not be likely to make the difference between success and failure. He was also uneasy about the position both in the western and Russian theatres of war. He therefore declined to yield, and the Council, although Mr. Churchill's views appear to have received some support, finally decided in accordance with Lord Kitchener's advice. It is clear that, at the time of the discussion, Lord Kitchener still thought that the fleet, unaided, would be able to obtain entrance into the Sea of Marmora.

With the decision finally taken on February 26, the fifth phase in these transactions may be said to have closed. On February 16, it had been decided to employ troops on a large scale. This decision still held good, but its execution was to be delayed. At the same time, the idea of forcing the Dardanelles by the action of the fleet alone had not been abandoned.

General Birdwood's Reports

Another meeting of the War Council was held on March 3. By this time Lord Kitchener's opposition to the dispatch of the XXIXth division had apparently weakened. On the question being raised by Mr. Churchill, he said that "he proposed to leave the question open until March 10, when he hoped to have heard from General Birdwood." General Birdwood, however, arrived at the Dardanelles before the 10th. On the 5th, he telegraphed to Lord Kitchener: "I am very doubtful if the navy can force the passage unassisted. In any event the forcing of the passage must take a considerable time; the forts that have been taken up to the present have been visible and very easy, as the ships could stand off and shoot from anywhere, but inside the Straits the ships are bothered by unknown fire." This was followed on the 6th by a telegram to the following effect: "I have already informed you that I consider the admiral's forecast is too sanguine, and though we may have a better estimate by March 12, I doubt his ability to force the passage unaided." On March 10, Lord Kitchener, being then somewhat reassured as regards the position in other theatres of war, and being also possibly impressed by General Birdwood's reports, announced to the War Council that "he felt that the situation was now sufficiently secure to justify the dispatch of the XXIXth division."

The sixth phase in these transactions was thus reached. The decision of February 16, the execution of which had been suspended on the 20th, again became operative on March 10. In the meanwhile, three weeks of valuable time had been lost. The transports, which might have left on February 22, did not get away till March 16.

Lord Kitchener's Responsibility

It is with great reluctance and hesitation that we comment on these proceedings, for it is obvious that Lord Kitchener was mainly responsible for the decisions taken during the critical period between February 16 and March 10, and it is quite possible that, were he alive, he might be able to throw a new light upon them. Nevertheless, we think it is incumbent on us to state the conclusions at which, with the evidence before us, we have arrived.

Lord Kitchener's position at this time was one of great difficulty. With the forces at his disposal he had to provided for home defence and also for maintaining an adequate force both in Flanders and Egypt. Was he to add to the demands which he had to meet the further liability of undertaking an additional military operation on a large scale in another and distant theatre of war? It can be no matter for surprise that he hesitated to do so. Subsequent events showed that the fears he entertained for the immediate future were groundless, but to impute any shadow of blame on that account would involve judging by the light of the wisdom which is the product of after-knowledge. Dealing, however, solely with the evidence which was available at the time, it certainly seems strange that the actualities of the situation should not have been more fully realized both by

Lord Kitchener and his colleagues. From the moment when large bodies of troops were massed in the immediate neighborhood of the Dardanelles, even although they were not landed, the situation underwent a material change. Whatever may have been the intentions of the government, the public opinion of the world must have been led to believe that an intention existed of making a serious attack both by land and sea. The loss-of-prestige argument, therefore, naturally acquired greater force than had been formerly the case. From the time the decision of February 16 was taken there were really only two alternatives which were thoroughly defensible. One was to accept the view that by reason of our existing commitments elsewhere an adequate force could not be made available for expeditionary action in the Eastern Mediterranean; to face the possible loss of prestige which would have been involved in an acknowledgment of partial failure, and to have fallen back on the original plan of abandoning the naval attack on the Dardanelles, when once it became apparent that military operations on a large scale would be necessary. The other was to have boldly faced the risks which would have been involved elsewhere and at once to have made a determined effort to force the passage of the Dardanelles by a rapid and well-organized combined attack in great strength. Unfortunately, the government adopted neither of these courses. Time, as Mr. Asquith very truly said to us, was all-important. Yet for at least three weeks the government vacillated and came to no definite decision in one sense or the other. The natural result ensued. The favorable moment for action was allowed to lapse.

SIR IAN HAMILTON

Early in March it was decided to send out Sir Ian Hamilton to command the troops being assembled near the Dardanelles. His instructions and a conversation he had with Lord Kitchener made it clear that the scope of the military operations was not fully decided. The instructions contain the following passage:

The fleet has undertaken to force the passage of the Dardanelles. The employment of military forces on any large scale at this juncture is only contemplated in the event of the fleet failing to get through after every effort has been exhausted.

Having entered on the project of forcing the Straits, there can be no idea of abandoning the scheme.

Sir Ian Hamilton in his evidence dwelt strongly on the total absence of information furnished to him by the War Office Staff. No preliminary scheme of operations had been drawn up. "The Army Council has disappeared."

Admiral Carden's Instructions

Important telegrams passed between the First Lord and Admiral Carden between March 10 and 16. Mr. Churchill on March 11 asked whether the time had not arrived when "you will have to press hard for a decision," adding: "Every well-conceived action for forcing a decision, even should regrettable losses be entailed, will receive our support."

In his reply Admiral Carden said:

I consider stage when vigorous action is necessary for success has now been reached. I am of opinion that in order to ensure my communication line immediately fleet enters the Sea of Marmora, military operations on a large scale should be opened at once.

On March 15 Mr. Churchill sent another telegram to Admiral Carden, in which he said:

When General Hamilton arrives on Tuesday night concert with him in any military operations on a large scale which you consider necessary. . . . . The XXIXth division (18,000 additional men) cannot arrive until April 2.

Admiral Carden said he would do so, but on the following day he was obliged to resign for reasons wholly based on the state of his health.

Admiral de Robeck was given the command, and on March 19 he telegraphed that he had that day had a satisfactory interview with Generals Hamilton and D'Amade and Admiral Wemyss. He proposed to proceed with operations on the following day. The following are some of Admiral de Robeck's answers to the commission:

I think everyone thought it better to have a combined operation, but one was not consulted as to whether it was the right way to do it or not—we were told to bombard these forts, so we did it.

The results of the bombardment in which ships were lost and damaged are well known.

THE POSITIONS RECONSIDERED

On March 19, Sir Ian Hamilton telegraphed to Lord Kitchener: "I have not yet received any report on the naval action, but from what I actually saw of the extraordinarily gallant attempt made yesterday I am being most reluctantly driven towards the conclusion that the Dardanelles are less likely to be forced by battleships than at one time seemed probable, and that if the army is to participate its operations will not assume the subsidiary form anticipated.

"The army's share will not be a case of landing parties for the destruction of forts, etc., but rather a case of a deliberate and progressive military operation carried out in force in order to make good the passage of the navy." Lord Kitchener at once replied in the following terms: "You know my views that the passage of the Dardanelles must be forced, and that if large military operations on the Gallipoli Peninsula by the army are necessary to clear the way, those operations must be undertaken after careful consideration of the local defences, and must be carried through." We have already mentioned that Sir Ian Hamilton regarded this telegram in the light of a "peremptory instruction that he was to take the peninsula." We think that he was justified in doing so. On March 22, Sir Ian Hamilton again telegraphed to Lord Kitchener stating that he proposed to go to Alexandria. On March 23, Lord Kitchener telegraphed to Sir Ian Hamilton: "I hear that April 14 is considered by you as about the date for commencement of military operations if the Dardanelles have not been forced by the fleet before that date. I think that you had better know at once that I regard any such postponement as far too long. I should like to know how soon you could act on shore." These telegrams are conclusive proof that Lord Kitchener had by that time wholly abandoned the idea of a purely naval operation, and realized the fact that military operations on a large scale were necessary. The telegrams also prove that Lord Kitchener, in contemplating military action, had no clear idea as to when a landing could be made. As a matter of fact the landing did not take place until April 25.

On March 23, Sir Ian Hamilton telegraphed to Lord Kitchener: "I have now conferred with admiral and we are equally convinced that to enable the fleet effectively to force the passage of the Dardanelles the co-operation of the whole military force will be necessary."

The first impression produced by the receipt of the news of the bombardment was that the naval operations should continue in spite of the losses which had been incurred. The following statement in Mr. Churchill's narrative shows what happened. "I regarded it as only the first of several days' fighting, though the loss in ships sunk or disabled was unpleasant. It never occurred to me for a moment that we should not go on, within the limits of what we had decided to risk, till we reached a decision one way or the other. I found Lord Fisher and Sir Arthur Wilson in the same mood. . . . . The first telegrams received from Admiral de Robeck dated March 19 and 20 clearly indicate that he shared the view entertained at the Admiralty. . . . .

A meeting of the War Council was held on the morning of the 19th, at which it was decided "to inform Vice Admiral de Robeck that he could continue the naval operations against the Dardanelles if he thought fit."

On March 23, however, Admiral de Robeck changed his views. He spoke of the "mine menace" being "much greater than we expected." He said that time would be required for "careful and thorough treatment, both in respect of mines and floating mines." He added: "Time will be required for this, but arrangements can be made by the time the army will be ready. A decisive operation about the middle of next month appears to me better than to take great risks for what may well be only half measures." He further said: "It does not appear to me practicable to land a sufficient force inside the Dardanelles to carry out this service. This view is shared by General Hamilton."

Mr. Churchill Overruled

On the 26th, Admidal de Robeck further telegraphed: "The check on March 18 is not, in my opinion, decisive, but on March 22 I met General Hamilton and heard his views, and I now think that, to obtain important results and to achieve the object of the campaign, a combined operation will be essential." This telegram, Mr. Churchill says, "involved a complete change of plan and was a vital decision. I regretted it very much. I believed then, as I believe now, that we were separated by very little from complete success." The whole question was then discussed at great length at the Admiralty. Mr. Churchill records: "I proposed that we should direct the admiral to renew the naval attack, according to his previous intention. The First Sea Lord, however, did not agree; nor did Sir Arthur Wilson; nor did Sir Henry Jackson. Lord Fisher took the line that hitherto he had been willing to carry the enterprise forward, because it was supported and recommended by the commander on the spot. But now that Admiral de Robeck and Sir Ian Hamilton had decided upon a joint operation, we were bound to accept their view. I do not at all blame Lord Fisher for this decision. The arguments for it were very strong indeed. But so were the arguments against it. Both the Prime Minister and Mr. Balfour, with whom I discussed the matter were inclined to my view, but as our professional advisers and the admiral on the spot were against it, it was impossible to go further, and I bowed to their decision. But with regret and anxiety."

This was the last phase of the "origin and inception" period. From this time onward two points became perfectly clear. One was that the government had no intention of abandoning the attack on the Dardanelles; the second was that the attack would be made both by the navy and by military forces who would be employed on a large scale.

RESULTS OF THE OPERATIONS

Views of Mr. Asquith

In conclusion, the commission discuss the results of the operations. The attempt to force the Dardanelles and to reach Constantinople failed, but it would be an exaggeration to say that the expedition, considered as a whole, was a complete failure. It was fairly successful in creating a diversion in favor of Russia, and it can scarcely be doubted that, but for it, Bulgaria would have joined the Central Powers at a much earlier date. The Prime Minister (Mr. Asquith) spoke very decisively on these points, as the following extracts from his evidence show:

"The Chairman. In spite of the fact that it was a failure in one sense, do you think it was a success in another, and that if you had not carried out that expedition to the Dardanelles, the position of the Allies would have been very much worse than it is now? A. Yes, I am unhesitatingly of that opinion. I say so now, after all the experience we have gained, and after what one must admit to have been the ultimate failure of the expedition. I say deliberately that there is no operation in the whole of this war which promised better results than the Dardanelles operation. If it had succeeded, and it would have succeeded but for things which in the course of your inquiry you will come across and no doubt pronounce upon, in my judgment it would have produced a far greater effect upon the whole conduct of the war than anything that has been done in any other sphere of the war.

"Q. I think nobody can doubt that for a moment, but it does not go very far. If successful it would have had an enormous effect; but the question I wanted to ask you was this; even as it was, you think the effect was very beneficial? A. I do, even though it failed. If you like I will tell you why.

"Q. Yes, please. A. I will give you two reasons. There are a great many I might give, but I will give two. In the first place, it undoubtedly staved off and postponed for months the adhesion of Bulgaria to the Central Powers. There is no doubt whatever about that. In the second place—and this was the point Lord Kitchener always insisted upon up to the end—he said to me a hundred times it contained and immobilized very nearly 300.-000 Turkish soldiers for the best part of nine months, who otherwise would have been a most formidable accretion to the enemy forces. Even though it failed, I consider it had very effective and powerful results."

Lord Grey said that there were certain consequences which would have happened sooner if the expedition had not been going on. He would strongly controvert any statement that the expedition was of no use at all. It was decidedly of use, but it must remain a question of opinion whether it was worth such a tremendous sacrifice of effort.

On these opinions the commission says:

We are generally in agreement with the views expressed by Mr. Asquith and Lord Grey, but we regard Lord Kitchener's estimate of the number of Turkish troops immobilized for nearly nine months as conjectural.

Finally the commission quotes opinions on what might have happened if the naval attack on March 18 had been pressed, including a reported opinion of Enver Pasha, which reads:

"If the English had only the courage to rush more ships through the Dardanelles they could have got to Constantinople, but their delay enabled us thoroughly to fortify the Peninsula, and in six weeks' time we had taken down there over 200 Austrian Skoda guns."

The narrative concludes:

Whatever weight may be attached to these opinions and reports it must be remembered that out of the 16 ships which attacked the Straits on March 18 three were sunk and four were rendered unfit for further immediate action. Had the attack been renewed within a day or two there is no reason to suppose that the proportion of casualties would have been less, and, if so, even had the second attack succeeded, a very weak force would have been left for subsequent naval operations.

Appended to the report are minutes of dissent of Mr. Andrew Fisher, Sir Thomas Mackenzie and Mr. W. F. Roch, M. P.

Mr. Roch's Minority Report

The minority report of the Dardanelles Commission made by Mr. W. F. Roch, M. P., reads as follows:

(1) The facts disclosed in the course of the inquiry show that the War Council concentrated their attention too much on the political ends to be gained by an offensive policy in the east and gave too little attention to the means by which that policy could be translated into terms of naval and military action.

The War Council never had before them detailed staff estimates of men, munitions, and material, or definite plans showing them what military operations were possible.

The War Council also underestimated without any real investigation the strength of the Turkish opposition.

(2) The War Council rejected without sufficient consideration all previous opinions against a purely naval attack on forts. The problem of forcing the Dardanelles, even by a purely naval attack, required the con-

sideration of the expert engineer and artilleryman as much as that of the expert naval officer, and should therefore have been submitted to a joint naval and military staff for investigation.

(3) Mr. Churchill failed to present fully to the War Council the opinions of his naval advisers, and this failure was due to his own strong personal opinion in favor of a naval attack. Mr. Churchill should also have consulted the Board of Admiralty before such a large and novel departure in naval policy was undertaken.

(4) It is difficult to understand why the War Council did not meet between March 19 and May 14. The failure of the naval attack on March 18 showed the necesssity of abandoning the plan of forcing the passage of the Dardanelles by purely naval operations. The War Council should then have met and considered fully the future policy to be pursued.

(5) Important political advantages were gained by the first success of the naval attack and the possibility of further success. But these advantages would not have continued unless further operations had been undertaken at the Dardanelles or elsewhere in the east after the failure of the naval attack on March 18.

(6) Finally, I strongly recommend that operations of a similar character should in future be thoroughly considered by a joint naval and military staff before they are undertaken. It is essential for the success of such operations that both the navy and the army should be recognized as integral factors consulting and co-operating in the common policy to be pursued.

Commenting editorially upon the Dardanelles campaign *The Times Weekly* (London) said in part:

"There is not much credit here for anyone concerned, except the unfortunate sailors on the spot. Mr. Churchill remains, as the public have rightly held, the prime mover in the Dardanelles adventure. He was at least consistent in his purpose when all the rest were vacillating. *But it was the consistency of a dangerous enthusiast, who sought expert advice only where he could be sure of moulding it to his own opinion, and unconsciously deceived both himself and his colleagues about the real character of his technical support.* All things considered, the nation may well be thankful that they were saved in the end, by the suppression of Mr. Churchill, from a still more extensive disaster in the Straits."

The Army and Navy Gazette (London), dated March 17, 1917, commented as follows:

"Much surprise has been expressed that there should have been a good deal of muddling with the conduct of the war at the beginning. Those who have been ready to apportion blame for the mistakes then made have given insufficient thought or consideration to the fact that we had not been at war for a hundred years, that the war to be entered upon was of a wholly unprecedented character, and that the machinery for its prosecution was entirely a peace product and almost wholly adapted for peace purposes. Thus we find from the report of the Dardanelles Commission that in those early months, at all events, sea power, the vital factor of the situation then as now, was inadequately represented in the councils of the nation. If this was so in the councils of the British Empire, which was made and exists by sea power, so much more must it have been the case in the councils of the Allies, which are primarily great military powers. It became, therefore, almost impossible for naval opinion to have its proper weight in the allied conduct of the war. The two services were represented by Mr. Churchill and Lord Kitchener, both of whom had been brought up in military schools of thought, and were without the seaman's intuition so essential in regard to the proper appraisement, the practicability, and the value of naval operations. Yet Mr. Churchill, the First Lord, by custom, precedent, and law, was the only person to speak with authority on naval matters in the Council. His colleagues, the Sea Lords, were only responsible for so much of the naval work as he might depute to them, and any technical advisers he might invite to accompany him to the Council were only there to express their opinion when asked for it. Such had been the practice and procedure for ages. Naval observance and discipline forbade the interposition by these officers of their views uninvited. In the event of serious disagreement with their chief two courses only were open to them, private protest and resignation of office. When, therefore, the project of attacking the Dardanelles forts was before the Council, the conditions under which the naval view could be presented adequately were difficult and precarious.

"Turning from the abstract to the concrete, it is to be noted that the undertaking as it was first proposed to the professional officers and to the Council had the character merely of a diversion, which was to include an experimental test of the power of modern ship guns against forts, to be followed by a withdrawal if this was found to be unsatisfactory. Lord Kitchener spoke of the affair as a demonstration. Admiral Carden's reply to Mr. Churchill's telegram of January 6, received on January 11, suggested four successive operations as possible, of which the destruction of the defences at the entrances to the Dardanelles was the only one which had the approval of the naval authorities at the Admiralty—and not of all of these. The next day Lord Fisher, in a minute to Admiral Oliver, said: 'I have told Crease to find out from Percy Scott and the gunnery experts of anything to prevent the *Queen Elizabeth* firing all her ammunition at the Dardanelles forts instead of uselessly into the sea at Gibraltar, and to let you know.' Presumably the gunnery experts raised no objection to this, as the *Queen Elizabeth,* instead of making her gun-mounting trials at Gibraltar, went on, but it is understood that Sir Percy Scott personally advised against the whole operation, on technical grounds, holding that the experience of the German howitzers against the forts at Liege and Antwerp, with which Mr. Churchill was evidently obsessed, afforded no criterion of what guns on board ship could do. Clearly professional opinion was not unanimous on the subject even of attacking the outer forts. Then, too, there was always in the background an apprehension lest these operations should develop and imperil the situation in the North Sea. On January 25, Lord Fisher submitted a memorandum on naval policy to the Prime Minister which was practically a protest against the attack on the Dardanelles as a purely naval proposition. This date, it will be observed, was over three weeks after the request from Russia, and a similar period before the bombardment was opened on February 19. To this memorandum Mr. Churchill replied, and on the morning of January 28 both he and Lord Fisher were summoned by the Prime Minister to discuss the whole matter. Of this meeting Mr. Roch says:

"My view of the evidence is that Lord Fisher left the room under the impression that the Prime Minister was in favor of the proposed operations at the Dardanelles, and that the Prime Minister had formed the conclusion that Lord Fisher's objections were due to his preference for his own alternative scheme as a matter of high policy, and were not directed against the practicability of the operations.

"The meeting of the War Council was then held. . . . .

"It is manifest that Lord Fisher allowed himself to be persuaded by Lord Kitchener that it was his duty to waive his own objections to the enterprise, seeing that the Prime Minister and all the other members of the Council were in its favor. What is extraordinary is that the Prime Minister did not consider it necessary to acquaint the other members of the Council with the reasons which had prompted Lord Fisher's withdrawal from the Council table, or that no other member endeavored to obtain enlightenment on this point. Mr. Balfour said in evidence:

"'My own view is that if professional advisers are present at such a council as that it is the business of the chairman, and perhaps of other members, to see that nothing is passed over their heads on which they have an opinion until the opinion has been extracted.'

"It is not only futile but wrong to blame the technical advisers if, being present, they were given no opportunity to express their opinion. It is to be noted that both the Colonial Ministers support and approve the attitude of Lord Fisher and Sir Arthur Wilson. From a sense of loyalty and discipline these officers remained silent, but no such restraint was placed upon the members of the Council, and the responsibility for the decision then come to must rest conjointly upon them, and them alone. Had the Council looked into the proposition in all its bearings the decision might have been different, and the whole course of the war changed.

"Afterwards the progress of events, political and international, with the fear of a loss of prestige, became so strong that the expected withdrawal of the ships if a bombardment proved unsatisfactory did not take place. Amphibious operations succeeded naval action. The demands of these much larger undertakings, with the impetuosity of Mr. Churchill, forced matters on, until the appearance of the submarines in the Mediterranean obliged the use of material which threatened an abandonment of Lord Fisher's alternative plan, and also seemed likely to affect adversely our position in the North Sea. When the claims of high naval policy became insistent, and other means of protest had failed, the First Sea Lord resigned. In taking this course Lord Fisher was supported by precedent. The cases of Middleton (afterwards Lord Barham), Admiral Berkeley, Lord Beresford, and more recently of Sir Frederick Richards (although in this case the object was attained without a relinquishment of office) will readily occur to mind, and there are others less well known. With regard to the relationship of Mr. Churchill towards his board, this raises the whole question of the constitution and organization of the Admiralty. It is clear that the other Sea Lords had no responsibility. Some people might suppose, as Mr. Asquith did, that the First Lord represents the collective judgment of his colleagues, but as a matter of fact he is under no legal obligation to do so, nor even to consult them on matters of general policy. From time immemorial the attitude of a First Lord towards his colleagues has depended entirely upon the personality of the First Lord himself. Lord Barham at the time of Trafalgar, we are told, never consulted his board at all; and Sir John Briggs, out of an experience of 65 years at the Admiralty, stated that 'First Lords have upon their own responsibility acted in opposition to the strongly expressed opinions of the naval members of the board upon certain occasions.' The Duke of Somerset and Sir James Graham, both eminent First Lords, in giving evidence before a committee on this subject, stated that they considered themselves supreme. The present Admiral of the Fleet, Sir Charles Hotham, also, when Fourth Sea Lord in 1890, expressed the opinion that "it would be better to do away with the 'Board of Admiralty,' and to call the First Lord 'Secretary of State for the Navy,' which he actually is according to custom and practice, and according to the Orders in Council." What is obvious is that the more time the Sea Lords, other than the First Sea Lord, are forced to devote to questions of policy and strategical problems, the less attention they can give to their multifarious duties of departmental administration.

"The main conclusion to be drawn from the manner in which the Dardanelles undertaking was handled is that it practically brought to an end the use of the navy as an offensive weapon. Thus the allied cause was deprived of the maximum use of its sea power. Sir Edward Carson has told us that while he is at the Admiralty the sailors will have full scope: they will not be interfered with by him, and he will allow no one else to interfere with them. It is, however, another matter whether there is yet any guarantee that the naval view is as fully recognized as it should be by a maritime Empire, and has its due weight in the councils of the Allies."

UNITED STATES

UNITED STATES VESSELS BUILDING AND AUTHORIZED

NOTE.—The Navy Department has discontinued reports of the degree of completion of vessels; the latest information is dated January 1, 1917.

Vessels	Displacement	Main battery	Speed	Number Shafts	Engines*	Where building †
Battleships						
40 New Mexico	32,000	12 14-in.	21	4	El	New York (N).
41 Mississippi	32,000	12 14-in.	21	4	Ct Gc	Newport News.
42 Idaho	32,000	12 14-in.	21	4	Pt Gc	Camden.
43 Tennessee	32,300	12 14-in.	21	4	El	New York (N).
44 California	32,300	12 14-in.	21	4	El	Mare Island (N).
45 Colorado	32,600	8 16-in.	21	4	El	Camden.
46 Maryland	32,600	8 16-in.	21	4	El	Newport News.
47 Washington	32,600	8 16-in.	21	4	El	Camden.
48 West Virginia	32,600	8 16-in.	21	4	El	Newport News.
Battle Cruisers						
1	34,800	10 14-in.	35	4	El	Newport News.
2	34,800	10 14-in.	35	4	El	Newport News.
3	34,800	10 14-in.	35	4	El	Camden.
4	34,800	10 14-in.	35	4	El	Fore River.
5	34,800	10 14-in.	35	4	El	Philadelphia (N).
Scout Cruisers						
4	7,100	8 6-in.	35	4	Pt G	Seattle.
5	7,100	8 6-in.	35	..		Seattle.
6	7,100	8 6-in.	35	..		Cramp's.
7	7,100	8 6-in.	35	..		Cramp's.
8	7,100	8 6-in.	35	..		Union Iron Wks.
9	7,100	8 6-in.	35	..		Union Iron Wks.
Destroyers						
66 Allen	1,071	Four 4-inch guns and four triple torpedo tubes.	30	2	Pt G	Bath.
68 Shaw	1,110		29.5	2	Pt G	Mare Island (N).
69 Caldwell	1,085		32	2	Ct G	Mare Island (N).
70 Craven	1,085		32	2	Pt G	Norfolk (N).
71 Gwin	1,123		30	2	Pt G	Seattle.
72 Conner	1,121		30	3	Pt Gc	Cramp's.
73 Stockton	1,121		30	3	Pt Gc	Cramp's.
74 Manley	1,085		32	2	Pt G	Bath.
75	1,085		35	2	Pt G	Bath.
76	1,085		35	2	Pt G	Bath.
77	1,085		35	2	Pt G	Bath.
78	1,085		35	2	Pt G	Bath.
79	1,085		35	2	Ct G	Fore River.
80	1,085		35	2	Ct G	Fore River.
81	1,085		35	2	Ct G	Fore River.
82	1,085		35	2	Ct G	Fore River.
83	1,085		35	2	Ct G	Fore River.
84	1,085		35	2	Ct G	Fore River.
85	1,085		35	2	Ct G	Fore River.
86	1,085		35	2	Ct G	Fore River.
87	1,085		35	2	Ct G	Union Iron Wks.
88	1,085		35	2	Ct G	Union Iron Wks.
89	1,085		35	2	Ct G	Union Iron Wks.
90	1,085		35	2	Ct G	Union Iron Wks.
91	1,085		35	2	Ct G	Union Iron Wks.
92	1,085		35	2	Ct G	Union Iron Wks.
93	1,085		35	2	Pt G	Mare Island (N).
94	1,085		35	2	Pt G	Mare Island (N).
Gunboats						
21	1,575	3 4-in.	12	1	Pt G	Charleston (N).
Fuel Ships						
15 Cuyama	14,500	....	14	2	R	Mare Island (N).
16	14,500	....	14	2	R	Boston (N).
Supply Ships						
1 Bridge	8,500	....	14	2	R	Philadelphia (N).
Transports						
1 Henderson	10,000	....	14	2	R	Philadelphia (N).
Hospital Ships						
1	9,800	....	16	2	Pt G	Philadelphia (N).
Ammunition Ships						
1	......	....	16	2	Pt G	Puget Sound (N).

* El. Electric drive.
Ct. Curtis turbines.
Pt. Parsons turbines.
Gc. Geared cruising turbines.
G. Geared turbines.
R. Reciprocating engines.
†(N) Signifies building at Government Navy Yard.

UNITED STATES VESSELS BUILDING AND AUTHORIZED—CONTINUED

Vessels	Surface Speed	Engines*	No. Cylinders	Builders
Submarines				
44 L-5	14	DS	2	Lake (Bridgeport).
45 L-6	14	DS	2	Lake (Long Beach).
46 L-7	14	DS	2	Lake (Long Beach).
47 M-1	14	DL	2	E. B. Co. (Quincy).
48 L-8	14	DS	2	Portsmouth Navy Yard.
52 Schley	20	DL	4	E. B. Co. (Quincy).
53 N-1	13	DL	4	E. B. Co. (Seattle).
54 N-2	13	DL	4	E. B. Co. (Seattle).
55 N-3	13	DL	4	E. B. Co. (Seattle).
56 N-4	13	DS	2	Lake (Bridgeport).
57 N-5	13	DS	2	Lake (Bridgeport).
58 N-6	13	DS	2	Lake (Bridgeport).
59 N-7	13	DS	2	Lake (Bridgeport).
60	20	DL	4	E. B. Co. (Quincy).
61	20	DL	4	E. B. Co. (Quincy).
62 O-1	14	DL	4	Portsmouth Navy Yard.
63 O-2	14	DL	4	Puget Sound Navy Yard.
64 O-3	14	DL	4	E. B. Co. (Quincy).
65 O-4	14	DL	4	E. B. Co. (Quincy).
66 O-5	14	DL	4	E. B. Co. (Quincy).
67 O-6	14	DL	4	E. B. Co. (Quincy).
68 O-7	14	DL	4	E. B. Co. (Quincy).
69 O-8	14	DL	4	E. B. Co. (Quincy).
70 O-9	14	DL	4	E. B. Co. (Quincy).
71 O-10	14	DL	4	E. B. Co. (Quincy).
72 O-11	14	DS	4	Lake (Bridgeport).
73 O-12	14	DS	4	Lake (Bridgeport).
74 O-13	14	DS	4	Lake (Bridgeport).
75 O-14	14	DS	4	California Ship Bldg. Co. (Long Beach).
76 O-15	14	DS	4	California Ship Bldg. Co. (Long Beach).
77 O-16	14	DS	4	California Ship Bldg. Co. (Long Beach).
78	13½	DL R-1	4	E. B. Co.
79	13½	DL R-2	4	E. B. Co.
80	13½	DL R-3	4	E. B. Co.
81	13½	DL R-4	4	E. B. Co.
82	13½	DL R-5	4	E. B. Co.
83	13½	DL R-6	4	E. B. Co.
84	13½	DL R-7	4	E. B. Co.
85	13½	DL R-8	4	E. B. Co.
86	13½	DL R-9	4	E. B. Co.
87	13½	DL R-10	4	E. B. Co.
88	13½	DL R-11	4	E. B. Co.
89	13½	DL R-12	4	E. B. Co.
90	13½	DL R-13	4	E. B. Co.
91	13½	DL R-14	4	E. B. Co.
92	13½	DL R-15	4	E. B. Co.
93	13½	DL R-16	4	E. B. Co.
94	13½	DL R-17	4	E. B. Co.
95	13½	DL R-18	4	E. B. Co.
96	14	DS R-19	4	Lake.
97	14	DS R-20	4	Lake.
98	14	DS [illegible]	4	Lake.
99	14	DS [illegible]	4	Lake.
100	14	DS [illegible]	4	Lake.
101	14	DS [illegible]	4	Lake.
102	14	DS [illegible]	4	Lake.
103	13½	DL [illegible]	4	E. B. Co.
104	13½	DL [illegible]	4	E. B. Co.
105	13½	DL [illegible]	4	E. B. Co.
106	16	DS [illegible]	2	Lake.
107	15	DL [illegible]	4	E. B. Co.

R-Boats

118

159

S-4

S-5-41

116 —

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* DS. Diesel (Sulzer) engines.
DL. Diesel (New London) engines.

CONTRACTS FOR DESTROYERS.—The Secretary of the Navy established a record on March 24 by awarding contracts for 24 new destroyers on the same day that bids for the vessels were opened. Contracts for 10 were given to the Union Iron Works, of San Francisco, Cal.; eight to the Fore River Shipbuilding Company, Quincy, Mass.; and six to William Cramp and Sons, Philadelphia, Pa. Fifteen of these destroyers were authorized in the Naval Appropriation Act approved March 4, 1917, and the remaining nine will be paid for out of the Naval Emergency Fund. In making the awards, the maximum number mentioned by the bidders was allotted in each case. This coincides with our statement that only a lack of facilities will prevent the early award of contracts for as many more of these vessels.

The new destroyers are duplicates of the 35-knot type already under construction (the *Nos. 75* to *94*) and like the other vessels recently contracted for they are to be built on the cost-plus-10 per cent profit plan. They displace 1185 tons, are 310 feet long and 31-foot beam. The armament consists of four 4-inch guns, four torpedo-tubes and two 1-pounder automatic anti-aircraft guns. The limit of cost set by Congress is $1,300,000 per ship. The following bids were received:

Union Iron Works.—Ten destroyers, duplicates of destroyers now under construction by them, on basis of cost-plus-10 per cent profit.

Fore River Shipbuilding Corporation.—Four, six or eight destroyers, duplicates of destroyers now under construction by them, on basis of cost-plus-10 per cent profit.

William Cramp and Sons Ship and Engine Building Company.—Two vessels for $1,450,000 each; four vessels for $1,420,000 each; six vessels for $1,400,000 each. If open-hearth steel is used, a reduction of $10,000 on each vessel is offered. The Cramp Company also offers, as a second bid, to construct two, four or six destroyers on the basis of cost-plus-10 per cent profit.

Secretary Daniels announced that he would endeavor to arrange with the Maryland Steel Company, of Sparrows Point, Md., and with certain other smaller companies for the construction of additional destroyers. The Maryland Steel Company, which is now a property of the Bethlehem Steel Company, has built large merchant vessels and also built for the navy the great dry-dock *Dewey,* which made the voyage around the world to Manila, and certain of the large fuel ships now in the naval service. The company has not built destroyers, but it is believed that its facilities may be used to advantage in that direction now.

With the award on March 24 the navy has under construction or under contract for immediate construction a total of 52 destroyers, eight of which were authorized in 1914 and 1915, and 20 in 1916.—*Army and Navy Journal,* 3/31.

BATTLE CRUISERS NAMED.—Secretary of the Navy Daniels has announced that the five battle cruisers now under construction will be named the *Constitution, Constellation, Saratoga, Lexington* and *Ranger.*

These are the names of five of the most famous ships in the history of the American Navy, which have rendered most conspicuous service and acquired probably the greatest fame of all the ships in the navy's history.

The navy has preserved the *Constitution,* which is now at the Boston Navy Yard, and whose name will be changed to the *Old Constitution.*

The *Constellation,* which is now at Newport and is used as a training ship, will be known as the *Old Constellation.*

The name of the present ship *Saratoga,* will be changed to that of the third city of New York State. She was the cruiser *New York* until 1911, took part in the battle of Santiago, and will hereafter bear the name of the beautiful and historic city of Rochester.

There is no *Lexington* now on the navy list, and the new *Lexington* will be the fourth of that name in the navy.

The *Ranger* is a small vessel, built in 1876, and was used largely in surveying, being of small draft, about 13 feet. She is now loaned to the state of Massachusetts and is the public marine school ship at Boston. Her name will be changed to one that is appropriate to her service.

"We have selected these names," said Secretary Daniels, "for the largest ships ever constructed with the electric drive, because they have a national significance and their names recall the glory of the navy.

"From the beginning of our navy it has been the custom to preserve the names of great battles on sea and land in which our country has been victorious, and in the early part of the nineteenth century the list of the navy vessels was very largely a list of our country's victories. The general rule of naming the largest and heaviest dreadnoughts for states of the Union is still followed by the department. These five names have been given to these specially important battle cruisers with the assurance that they will stimulate their officers and men to deeds of courage and valor like those who have gone before on the *Constitution, Constellation, Saratoga, Lexington* and *Ranger*."

These battle cruisers will be built as follows: One in the Navy Yard at Philadelphia; two by the Newport News Shipbuilding Company, at Newport News, Va.; one by the New York Shipbuilding Company, at Camden, N. J., and one by the Cramp Shipbuilding Company, at Philadelphia, Pa.

The U. S. S. *Lexington* was the ship of John Barry that sailed from Delaware Capes March 31, 1776, captured the British sloop *Edward* and returned to Philadelphia, bringing the first prize to the Marine Committee of the Congress. In this capture, Richand Dale was taken by Barry, made a midshipman, and became a commodore. There were other *Lexingtons*. In the Civil War the iron-clad *Lexington* rendered conspicuous and valuable service in many battles: Belmont, Forts Donelson and Henry, Shiloh, Vicksburg, Yazoo River. The name Lexington commemorates the first battle of the Revolutionary War, at Lexington, Mass., April 19, 1775.

The U. S. S. *Saratoga* was the flagship of Commodore Macdonough at the battle of Lake Champlain, September 14, 1814, probably the only fleet action where an inferior beat a superior force. The name Saratoga has recently been given to the old cruiser *New York*, to enable the state name to be applied to the battleship *New York*. There have been other *Saratogas*, but none rendering so important a service as the flagship of Macdonough on Lake Champlain. The name commemorates the complete defeat of the British General Burgoyne in one of the "decisive battles of the world" at Saratoga, N. Y., and the surrender October 17, 1777.

The U. S. S. *Ranger*, under John Paul Jones, sailed from Portsmouth, N. H., November 1, 1777; arrived December 2, 1777, at Nantes; and, on February 14, 1778, received from the French Navy in Quiberon Bay, France, the first salute to the stars and stripes from a foreign government. The *Ranger* captured H. B. M. S. *Drake*, April 24, 1778, the first capture of a British man-of-war in the revolution. The *Ranger* also in this cruise landed her forces at Whitehaven and at the castle of the Earl of Selkirk.

The U. S. S. *Constellation* was launched September 7, 1797. Cruised in the West Indies in war with France, 1798-1800. February 9, 1799, commanded by Captain Thomas Truxtun, captured the French frigate *L'Insurgente*, which was taken into the U. S. Navy. Later the same month captured two other vessels. February 2, 1800, after a severe engagement with the French frigate, *La Vengeance* captured her. She escaped in the darkness. Attached to the Mediterranean squadron 1802-1804, took part in operations against Tripoli. July 22, 1802, engaged nine Tripolitan boats, killed a general and destroyed two of the boats. September 10, 1804, took a Tripolitan zebec. June 20 to June 23, 1813, while blockaded off Craney Island captured with her boats under command of Lieutenant Tarbell, three boats, secured 43 prisoners, killed and wounded 90 men belonging to the British squadron of 13 sail under Admirals Cockburn and Beckwith. During the Civil War cruised in European waters watching Confederate cruisers. The *Constellation* because of her success was called one of the "lucky" ships of the navy.

The U. S. S. *Constitution* was launched October 21, 1797; made first cruise under command of Captain Samuel Nicholson. Cruised in the West Indies during the war with France, 1798-1800 made several prizes. Flagship of Commodore Edward Preble in operations against Tripoli, 1801-1804. July, 1812, commanded by Captain Isaac Hull sailed from Annapolis. July 17, fell in with a British squadron, escaped after more than two days' chase from it when off the New Jersey coast. August 19, 1812, after an engagement of a half hour received the surrender of H. B. M. S. *Guerriere*, which had been so badly shot to pieces that she had to be sunk, the *Constitution* receiving so little damage that the crew gave her the name of *Old Ironsides.* December 29, 1812, commanded by Captain William Bainbridge captured British frigate *Java* after two hours' fight. February 15, 1814, commanded by Captain Charles Stewart, captured the British schooner *Pictou.* February 20, 1815, engaged at the same time H. B. M. ships *Cyane* and *Levant.*

ARMOR PLANT.—The Secretary of the Navy has decided, on the recommendation of the special committee which has been engaged on the problem, to establish the new armor-plate plant at Charleston, W. Va. The selection of this site was determined by such factors as nearness to the ore, cheapness of coal, gas and oil, and the offer of land without cost to the government, both for a plant and a proving ground. Charleston as a place of location of the armor-plate plant comes within the conditions prescribed by the Army War College that no supply depot, arsenal or munition-making plant of any considerable size, for military purposes, should be established or maintained east of the Appalachian Mountains, west of the Cascade or Sierra Nevada Mountains, nor within 200 miles of our Canadian or Mexican borders. It is doubtful if very much can be accomplished toward equipping a plant of this type for the $11,000,000 available for the purpose; certainly the existing sources of supply will not be greatly worried over anything which the Navy Department can produce in the shape of an armor plant for the sum named. The problems of the project only begin, of course, with the designation of the site, and, regardless of the determination to proceed with the project, there is a well-defined naval view which persists in identifying the government plant for the manufacture of armor as a grave mistake which promises to be a great extravagance. One of the first steps to be taken, of course, will be a departmental estimate to Congress increasing the appropriation and limit of cost. It is announced that work will commence at once under the bureau of yards and docks to the end that there may be as soon as possible available for use this combination of armor plant and proving grounds.—*Army and Navy Register,* 4/14.

NEW DRY-DOCK CONSTRUCTION.—A contract was awarded at the bureau of yards and docks, Navy Department, this week for the construction of the 1000-foot dry-dock at the Philadelphia Navy Yard at a cost of $2,300,000. This work will be done by the Maryland Dredging and Construction Company, of Baltimore, and it is expected the project will be completed in about 30 months. A contract was also awarded for the construction of the shipbuilding ways at the same navy yard in the sum of $464,870. Bids have been opened for the construction of the new gunshop at the Washington Navy Yard, estimated to cost $672,000.—*Army and Navy Register,* 4/14.

SUBMARINES.—Specific bids for 34 seagoing submarines of the 800-ton type were received at the Navy Department April 14th, in response to advertisements asking proposals on 38 such craft.

In addition to the formal bids the Department received proposals that the government itself construct submarines under license by the holder of the patents and rights used.

The Electric Boat Company proposed to build 18 submarines in from 16 to 26 months and at a price of $1,524,000 for each vessel constructed on the Atlantic coast and $1,592,000 for each constructed on the Pacific coast.

The limit of cost set by Congress for the submarines apparently excludes these proposals, as it is $1,300,000.

On a Profit Basis.—The company proposed as an alternative to construct the submarines on a cost-plus-15 per cent profit basis.

The California Shipbuilding Company, of Long Beach, Cal., and the Lake Torpedo Boat Company, of Bridgeport, Conn., proposed to build from four to eight submarines each in from 24 to 32 months at prices ranging from $1,288,000 to $1,299,000, depending upon design.

The cost-plus-percentage of profit plan was also proposed by the companies as an alternative, and the Lake Company offered to license the government to construct on its plans for $100 per net ton submerged displacement.

French License Offered.—Snyder and Co., a French concern, with offices in New York, proposed to license the government to build under its plans at a rate of $65,000 for the first boat and $45,000 for each succeeding vessel; or, to license the government to build oil engines under its plan for submarine use at $35,000 for the first engine and $25,000 for each succeeding engine built.—*Washington Star,* 4/14.

SUBMARINE CHASERS.—Secretary Daniels this week directed the navy yard, New York, to proceed at once with the construction of 60 submarine chasers. The yard quoted a price of $30,000 each for the boat complete except the machinery and can lay down 40 at once. Delivery will begin in from 60 to 80 days, and boats will be delivered at the rate of one every three days.

Contracts have been awarded to private concerns for 100 boats of this class.—*Army and Navy Register,* 4/7.

In less than three months there will be placed at the disposal of the Navy Department a flotilla of submarine chasers which it is claimed will surpass in fighting efficiency any vessels of their class designed since the great war began. The vessels which will make up this flotilla are being built for Harold Vanderbilt, Robert E. Tod, Alfred I. du Pont, and Payne Whitney, and are expected to be ready for service before the first of August.

They are made of steel throughout along the lines of torpedo-destroyer construction, are 110 feet long, and the builders have guaranteed a speed of 27 knots, and have also informed the owners they need not be surprised if a speed of 30 knots is attained. Each little craft has twin screws, driven by triple expansion engines. The fuel will be oil and the two steam generators will develop 1500 horsepower. The radius of action is 1500 miles at a speed of 15 knots, or 650 miles at full speed. The armament to be placed on the chasers has not been disclosed. The vessels are being constructed by the Herreshoff Company. Each will be manned by a complement of 20 officers and men.—*New York Times,* 4/15.

The *Marine Journal* informs us that the U. S. S. *Severn,* formerly the U. S. S. *Chesapeake,* has been sold and will be converted into a merchantman.

NAVAL ESTIMATES.—The President has approved the estimates submitted to him by Secretary Daniels of further appropriations required to put the navy in the highest state of preparedness in the quickest possible time, calling for a total appropriation of $468,394,551.87. Secretary Daniels had the estimates prepared in budget form, one covering personnel and calling for $175,855,761.87 and the other material and calling for $292,538,790. The naval act approved March 4, making immediately available appropriations totalling $517,273,802.08, added to the new estimates would make available for the navy almost a billion dollars. "The peace-time strength of the navy," said Secretary Daniels, "fixed in the naval act approved August 29, 1916, is 68,700 men and of the marine corps 13,740 men. The estimates submitted covering personnel call for a force of 150,000 men for the navy and 30,000 men for the marine corps, which are in addition to the 6000 apprentice seamen authorized by law; the hospital corps, which is fixed by law at 3½ per centum of the authorized enlisted strength of the navy and marine corps; enlisted men detailed to the naval militia, the flying corps, and enlisted men sentenced to discharge. Including these latter, the present authorized strength of the navy and marine corps total about 97,000 men. The proposed force exceeds that number by about an even 100,000—197,000 men all told for both the navy and marine corps. The estimate covering these increases covers the recruiting, transportation, clothing, subsistence, pay, and training of the men and provision for quarters for the marines. The other, or what we will term the 'material estimate,' is to provide for additional ships, guns and ammunition, various articles of ships' equipage, material and supplies of various kinds, for aviation, storage facilities for ordnance supplies, additional employes at navy yards, and to meet the added expenses of the Navy Department. I have put this estimate in budget form because it is almost impossible at this time to say with any degree of accuracy just how much will be needed for a particular purpose or activity, and, furthermore, I feel that the department's activities would be lessened if restricted in the use of the money, for it may later become necessary for a use for it now contemplated to give way to some other unforseen and more pressing object of expediture. Funds should be available to meet any possible contingency, and this estimate was phrased with great care so as to leave the President unhampered in the expenditure of the appropriation to secure the best naval efficiency."—*Army and Navy Register*, 4/7.

VACANCIES IN PAY CORPS.—The Secretary of the Navy has announced that 35 of the existing vacancies in the grade of assistant paymaster will be filled by the appointment of graduates of distinguished military colleges designated as such by the War Department, the diplomas of such graduates being accepted in lieu of a written examination. An examination for the appointment of enlisted men and pay clerks will be held April 26, and another examination which will be open to all citizens of the United States between the ages of 21 and 26 will be held May 15 to fill such vacancies as may exist after the result of the April 26 examination is known.—*Army and Navy Register*, 3/31.

The following table shows the authorized strength of the navy—officers and enlisted men, midshipmen, flying corps, etc.—allowed under the act of August 21, 1916, for the current half of the calendar year 1917, and embracing the increase in the enlisted strength authorized by the President's two executive orders dealing with the navy and marine corps:

Enlisted men proper	87,000
Apprentice seamen	6,000
Hospital corps (including pharmacists)	2,929
Enlisted men sentenced to discharge	2,316
Enlisted men detailed to naval militia	1,309
Enlisted men of flying corps	350
Line officers	2,075
Medical officers	362
Pay officers	234
Construction officers	94
Civil engineer officers	44
Chaplains	84
Professors of mathematics	11
Dental surgeons	84

Midshipmen	1,762
Flying corps (officers)	150
Chief warrant officers	508
Warrant officers	350
Chief pay clerks, pay clerks, acting pay clerks	326
Marine corps (officers, line, staff and warrant)	637
Marine corps (additional numbers in grade)	2
Marine corps (clerks to assistant paymasters)	9
Marine corps enlisted men proper	17,400
Marine enlisted men sentenced to discharge	420
Total	134,456

The enlisted strength of the marine corps is to be just one-fifth of the authorized enlisted strength of the regular enlisted personnel of the navy. —*Army and Navy Journal.*

EARLY GRADUATION AT THE NAVAL ACADEMY.—It was announced at the Naval Academy April 11 that the present third class, which in ordinary conditions would be graduated in June, 1919, will be graduated in the latter part of June, 1918. As arranged at present, there is no second class. So far as at present authorized, the present fourth class will not be graduated in advance of the completion of the regular four years' course.

An order has been issued at the Naval Academy arranging the course in conformity with the advanced graduations. Until further orders there will be no review months or term examinations, but monthly examinations will be held as usual. In most of the subjects the work will be somewhat increased, so as to cover the regular amount in the shortened period.—*N. Y. Herald*, 4/12.

ORDNANCE AND GUNNERY

GUN VERSUS ARMOR.—Mr. J. Bernard Walker, in the *Scientific American*, of April 7, says:

"The excessive ranges at which naval engagements have been fought has been one of the surprises of the present war. For several years prior to 1914, target prictice was carried on in our own navy at ranges of from 9000 to 10,000 yards, and, so far as we knew, 10,000 yards was accepted by the foreign navies as the maximum at which it was necessary to train the gun crews for the actual ordeal of battle.

"Early in the war, however, it was realized that fighting was going to be done at the maximum ranges at which the ship having the speed-gage, could land effectively on the enemy. Thus, von Spee, although he carried nothing heavier than an 8.2-inch gun, elected to fight Cradock at 12,000 yards; and later, Sturdee, having the speed-gage of von Spee and the heavier guns, chose to stay off at a range of from 15,000 to 16,000 yards and take his time in picking off the German ships. Beatty, in the Dogger Bank fight, landed on the Germans at 17,000 yards, and later, in the great Jutland fight, some of Beatty's ships opened up at 20,000 yard, which, be it noted, is just double the maximum battle-range at which naval ships were practising when the war began.

"Because of the vast amount of valuable data gathered by the combatants during many a hotly contested sea-fight, we may be sure that the designs for new ships are based, not upon theory, but upon well-established facts. It is probable also, that the ships, guns and methods of armoring which have been adopted in the new construction of the British and German navies, will determine the trend of naval development for many years to come. Naturally it is difficult to obtain well authenticated information as to what the British are doing, but such as we have received goes to prove that the heavy, long-range gun will be the determining factor in the design of future battleships, and that its influence will be felt principally in the direction of increasing speed and mobility at the cost of armor. In 1914 the heaviest guns in any navy were the 15-inch guns on the *Queen Elizabeth* class, and they were mounted on ships which had an excess of four or five knots speed over contemporary battleships. Apparently the British, in spite of the fact that increasing the caliber so greatly limits the number of guns that can be carried, have gone up to an 18-inch gun, a piece whose shells must weigh not less than 3000 pounds and whose weight must approximate 150 tons. We understand that these enormous pieces have been mounted on ships that are lightly armored, but have a speed greatly in excess of anything hitherto attempted in ships carrying guns of the largest caliber.

"Herein then, we find a suggestion that the first-line fighting ships of the future may be lightly armored vessels, carrying guns of great range and power, and steaming at battle cruiser speed. In other words, it is quite possible that the slow-moving, heavily armored battleship, as we know it to-day, may give place to a type of battle cruiser in which armor will be practically eliminated in favor of speed and gun-power. Speed, it should be noted, is the logical concomitant of the big gun; for an excess of speed, will enable the fast ship to select the range at which its super-guns (if we may coin a term) will be able to land upon the enemy without his being able to make an adequate reply.

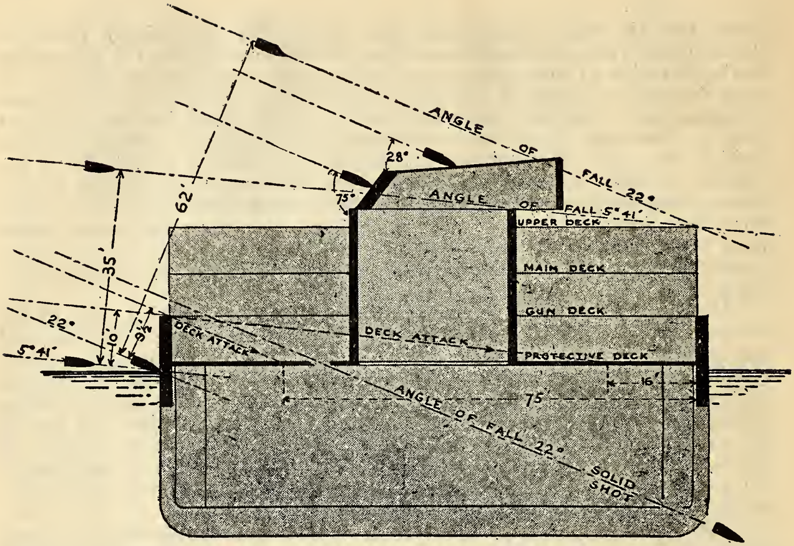
"The above considerations make it reasonable to expect that the naval fights of the future will take place at ranges even greater than those attempted in the present war. If naval artillery goes up to calibers of 18 or even 20 inches, it is certain that the ranges will go up proportionately; and it is quite conceivable that future engagements will be fought at ranges of from 20,000 to 25,000 yards, provided, of course, that vision is sufficiently good to permit of this.

"In the two accompanying sketches we have attempted to show how great a modifying effect the steeper angle of fall of the shell at these ranges must necessarily have upon the distribution of armor in war ships designed for that kind of fighting. The upper sketch shows, approximately, the present distribution of armor in battleships. In the lower sketch we show the modifications, which it seems to us should be made to meet what practically amounts to a modified high-angle fire.

"The armor plan of most existing battleships is drawn up to meet the conditions of attack at fighting ranges of from 8000 to 10,000 yards. The vitals of the ship are protected by a heavy water-line belt associated with a protective deck, three inches or so in thickness. In some of the later ships there are two protective decks, one in the usual position just above the water-line and the other at the gun deck at the level of the top of the belt. In the latter case the protective deck is generally about two inches and the gun deck about one inch in thickness. The ammunition hoists and the barbette and turret mechanism are protected by thick vertical armor, and the turret by a heavy sloping port-plate associated with lighter armor on the side walls and at the rear, and light armor 3 to 5 inches thickness on the roof.

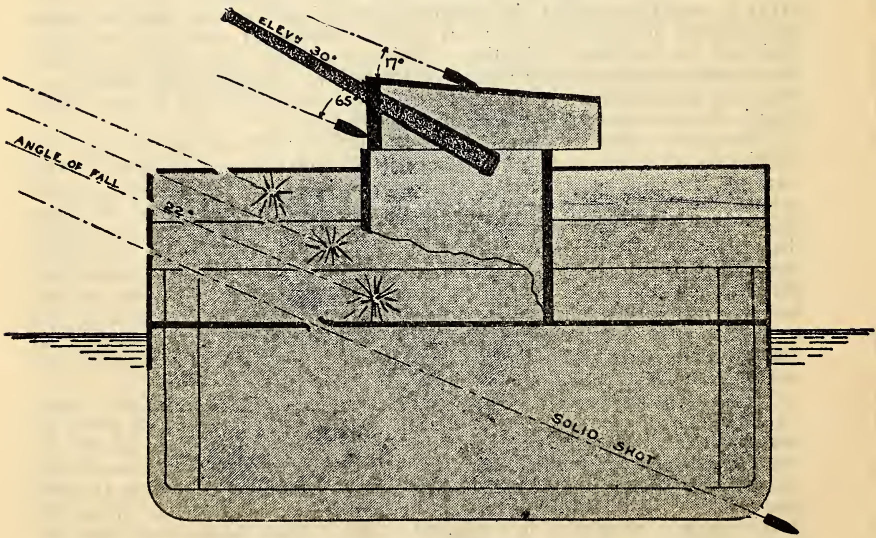
"Now at 10,000 yards a shell from one of our 50-caliber, 14-inch guns, would strike the enemy on an angle of 5 degrees, 41 minutes and it will be seen that the vitals of the ship would be well protected. A shell which just cleared the top of the armor belt, if it did not explode would reach only the far side of the protective deck. In our latest ships it has been thought best not to arm the topsides above the belt, but rather to concentrate the weight in belt, protective belt, barbettes, etc. It will be noticed from our diagram that at 10,000 yards the belt armor covers 10 feet out of the 35 feet of projected area of the ship which is exposed to shell-fire.

"Now at 20,000 yards the angle of fall of the 14-inch shell is 18 degrees and at 25,000 yards it is 26 degrees, 30 minutes the mean of which would



Angle of fall, 50-caliber, 14-inch gun, at 10,000 yards is 5° 41'. At 22,500 yards, angle of fall is 22°. Heavy belt armor covers the protective deck at the former range, but leaves it exposed at the extreme ranges.

PRESENT METHOD OF ARMOR PROTECTION, DESIGNED TO RESIST BIG-GUN ATTACK AT 10,000 YARDS



Redistribution of armor to meet the plunging fire due to extreme ranges. The complete envelope of light armor is designed to burst the shells before they reach the protective deck.

PROPOSED ARMOR PLAN TO MEET PLUNGING FIRE AT 20,000 TO 25,000 YARDS RANGE be about 22 degrees. Plotting this upon our diagram, we find that the heavy side armor protects less than one-sixth of the projected area of the ship, and that instead of a few feet of the protective deck being exposed to plunging shell attack, 75 feet are thus exposed. This means that under long-range attack not only are the chances of hitting the ship nearly doubled, but over three-fourths of the protective deck is subjected to plunging fire. Manifestly, the present method of distributing the armor was not designed to meet a modified high-angle fire, and the question arises as to whether our present methods of armor distribution should not be altered to meet the new conditions.

"We present in our lower sketch a suggested rearrangement of the armor. Taking it for granted that the vitals of the ship (motive power, steering gear, magazine, etc.), should have the first call upon the armor, it would seem that efforts should be directed to bursting the high-explosive shells as far above the protective deck as possible, on the probability that where an unexploded shell might go through, its fragments would not. It becomes a pertinent consideration whether it is not better to leave the protective deck at its present thickness of about 2 inches; armor the upper deck in preference to the gun-deck; and distribute the heavy belt in the form of lighter armor extending over the whole side of the ship. This complete armoring of the above-water portion of the ship would go far to insure the bursting of the shells as soon as they entered. The probability is that the shock of penetrating this outer armor would cause a shell to burst above the main deck, and in any case there would be the additional shock of passing through the main and gun-decks to cause fragmentation before the protective deck was reached.

"It seems to us that plunging fire should also bring about a modification of the turret armor. The sloping of the port plate of existing turrets was adopted to present an inclined surface to the attack of shells which arrived at an angle of between 5 and 7 degrees. As our diagram shows, a return to a vertical face of greater height would present a less favorable angle of attack (65 degrees in place of 75) and the rearward slope of the roof, which in any case should be thickened, would make penetration through the roof very unlikely. It is known that the loss of one at least, and possibly two, of the British battle cruisers in the Jutland fight, was due to the flash of an exploding shell which came through the roof reaching the magazines through open ammunition hoists.

"It will be understood that the above suggestions are based upon recognition of the fact that no thickness of armor will serve to keep out shells of 16- and 18-inch caliber, except at very oblique angles of impact; and that effort should be directed therefore to bursting them as near to the outside of the ship as possible.

"Finally, our diagram shows that a shell which did not burst or a solid shot, falling at 22 degrees and missing the top edge of the belt armor, would pass through the protective deck and out through the bottom of the ship. This suggests the thought that, in long-range engagements we may see a partial return to the use of non-explosive projectiles."

LEWIS MACHINE GUN.—It has been announced that the U. S. Marine Corps has adopted the Lewis machine gun and has placed an order for the delivery of 2000 guns of that type.

TORPEDO NETS.—The naval authorities have practically abandoned the idea of installing torpedo nets on board naval vessels. Such forms of protection against torpedo attack have been regarded with less and less favor in the English Navy, it is now learned. Such experience as has been permitted the British experts has justified the conclusion that the torpedo net used in connection with a ship of war is an awkward, troublesome, and perhaps really dangerous piece of equipment. At all events, it does not insure the complete protection which has been claimed for the torpedo net. When it comes to protection against submarine attack, it is believed that more reliance may be placed on internal construction, to say nothing of vigilance of personnel and readiness of gunnery. More confidence is reposed in the torpedo net placed in such positions, independent of vessels to be defended, and intended as a screen of interference to be employed against cruising submarines. These torpedo nets will undoubtedly be used in those places along our coast which might be regarded as otherwise vulnerable in the presence of German submarines, just as the system has been successfully employed in European waters by the Allies.—*Army and Navy Register,* 4/14.

NAVIGATION AND RADIO

RADIO STATIONS SEIZED.—Seizure of all radio stations in the United States and its possessions, operation of those needed for naval communication, and closing of others was authorized by President Wilson.

Enforcement of the order was delegated to Secretary Daniels, and preliminary steps toward carrying it out already are in progress. It is understood that all plans for which no place can be found in the navy's wireless system, including amateur apparatus, for which close search will be made, are to be put out of commission immediately.—*Army and Navy Register,* 4/7.

EXECUTIVE ORDER DESIGNATING DEFENSIVE AREAS ON ATLANTIC COAST.—By executive order the President on April 13 declared closed defensive sea areas around all principal American ports and coastal points on the Atlantic and Pacific coasts and about the harbors of Manila and Honolulu.

The Navy Department is directed by this order to prevent ships from violating the regulations covering the entrance to and exit from these closed areas, and it is expressly stated that armed force will be used to enforce these regulations, the United States Government waiving all responsibility for damages caused and the offenders against the regulations subjecting themselves to prosecution under the law.

"I. In the neighborhood of each defensive sea area entrances have been designated for incoming and outgoing vessels, including, in the case of areas across which more than one channel exists, an entrance for each channel. These entrances are described in these regulations in conjunction with the areas to which they respectively pertain.

"*Entrance Must be Authorized.*—II. A vessel desiring to cross a defensive sea area shall proceed to the vicinity of the entrance to the proper channel, flying her national colors, together with international code number and pilot signal, and there await communication with the harbor entrance patrol. It is expressly prohibited for any vessel to enter the limits of a defensive sea area otherwise than at a designated entrance and after authorization by the harbor entrance patrol.

"III. Boats and other craft employed in the harbor entrance patrol will be distinguished by the Union Jack, which will be shown from a position forward; they will also fly the usual naval pennant. At night they may show a vertical hoist of three lights—white, red and white, in the order named.

"IV. On receiving permission from the harbor entrance patrol to enter a defensive sea area a vessel must comply with all instructions as to pilotage and other matters that she may receive from proper authority, either before or during her passage across the area; it is understood that only upon condition of such compliance is the said permission granted.

"V. No permission will be granted to other than a public vessel of the United States to cross a defensive sea area between sunset and sunrise, nor during the prevalence of weather conditions that render navigation difficult or dangerous. A vessel arriving off a defensive sea area after sunset shall anchor or lie to at a distance of at least a mile outside its limits until the following sunrise; vessels discovered near the limits of areas at night may be fired upon.

"*Speed Limit Fixed.*—VI. No vessel shall be permitted to proceed within the limits of a defensive sea area at a greater speed than five (5) knots.

"VII. All matters pertaining to fishery and the passage of small craft within a defensive sea area shall be regulated by the senior officer of the harbor entrance patrol.

"VIII. These regulations are subject to modification by the senior officer of the harbor entrance patrol when the public interest may require, and such notification as circumstances may permit will be issued regarding modifications thus made.

"IX. Any master of a vessel or other person within the vicinity of a defensive sea area who shall violate these regulations, or shall fail to obey an order to stop or heave to, or shall perform any act threatening the efficiency of mine or other defences or the safety of navigation, or shall take any action inimical to the interests of the United States in its prosecution of war, may be detained therein by force of arms and renders himself liable to prosecution as provided for in the act to codify, revise and amend the penal laws of the United States, approved March 4, 1909, as amended by 'the act making appropriations for the naval service for the fiscal year ending June 30, 1918, and for other purposes,' approved March 4, 1917."—*N. Y. Herald,* 4/14.

HARBOR DEPTHS NEEDED.—Estimates and plans for river and harbor work submitted to Secretary of War Baker by the General Board of the Navy and the joint Army and Navy Board, urge the provision of 40-foot channels as a necessity in the defence of ports. This report says the naval stations at New York, Norfolk, Puget Sound and Hunters Point, San Francisco, should have a channel to the sea 40 feet deep at mean low water, while those at Boston, Philadelphia, San Diego and Mare Island should have a depth of 35 feet. The Navy Department also considers that the passage through Hell Gate and the East River between New York harbor and Long Island Sound should be provided as soon as practicable with a minimum depth of 35 feet and later with a depth of 40 feet, while inland waters to accommodate all classes of naval vessels should also have the following characteristics: Controlling depth at least 35 feet, and 40 feet if practicable; locks to be at least 1000 feet long, 110 feet wide, with depth of water over the sill of 40 feet and overhead clearances of fixed bridges 135 feet above mean high water.—*Marine Journal,* 4/7.

ENGINEERING

REMOVING IRON PLATE RUST.—An easy, cheap and effective method of removing rust from corrodes and pitted iron plates has been evolved as a result of experiments carried out at the Consolidated Gold Fields Laboratory, South Africa. It consists of applying to the surface of the iron a mixture of two parts of finely crushed sodium bisulphate and one part of common salt. This mixture is prepared, then wetted (just sufficiently to be cohesive) and applied to the plate. The moist mixture can be left till the plate is clean, but the action is more rapid if the mixture is scraped off every two or three hours and the iron scrubbed thoroughly with a wire brush and water. The treatment is repeated till the plate is clean. Usually 24 hours is sufficient for a badly corroded plate. When the plate is thoroughly clean it is well washed with an alkaline solution, and dried quickly. A coating of paraffin oil is at once applied to protect the surface against oxidation. The metal is then ready for the paint or other protective covering. The method is stated to be more effective than hammering, chiseling, the use of wire brushes or even a sand blast.—*Page's Engineering Weekly,* 9/3.

WIND RESISTANCE OF SHIPS.—Of late years much attention has been given to the question of the horsepower necessary to overcome the large resistance offered by ships to the atmosphere, particularly when they are steaming fast against a head wind. Naval Constructor William McEntee, of the United States Navy, gives in *Marine Engineering* the results of tests made in the wind tunnel at the Washington Navy Yard on a model of the collier *Neptune*. Tests show that if the vessel were steaming against a 30-mile wind at 14 knots, it would require about 770 effective horsepower to overcome the wind resistance. This is about 20 per cent of the power necessary to drive the ship through the water. The *Neptune* because of her large number of coaling booms and other top hamper offers an extreme case.—*Marine Journal*, 4/7.

THE IMPORTANCE AND NECESSITY OF OIL FUEL.—There is every indication that oil fuel for marine propulsion will be a very important factor at the end of the war. Many things point to this, chief among which are the shortage of tonnage, the necessity of obtaining the fullest efficiency from available ships, and the greater efficiency of oil-fired over coal-fired furnaces, not to mention the economy of space in favor of the former fuel and in the matter of machinery. A ton of coal, for example, occupies a space of 43 cubic feet, while a ton of oil takes up only 36 cubic feet, and the latter can also be easily carried in the double bottom ballast tanks. It has in fact been figured out by experts that this saving of space, if all freighters were equipped to burn oil, would add considerably to the world's tonnage without the construction of a single ship.

An equally important consideration, perhaps, is the increased average speed of a vessel that burns oil over one burning coal. In a comparison in this regard made by certain American owners the oil-burning vessel showed a saving of 25 days on the round trip, as compared with her sister ship, 18 days of this saving being due to increased speed and seven to time in coaling ports. In view of these facts, therefore, it is predicted that in the commercial struggle that will follow the war a widespread adoption of oil fuel by ship owners will be the logical outcome of the experience now being gained in obtaining from every ship the capacity of service she can be made to render.

In this connection it is of interest to note that some 70 oil-tank steamers are at present under construction in United States shipyards aggregating 375,859 tons, many of which are scheduled to be completed by summer or early in the fall.—*Marine Journal*, 4/7.

A COMBINED STEAM TURBINE AND CENTRIFUGAL BOILER FEED PUMP.—The displacement of the reciprocating boiler feed pump by the centrifugal pump furnishes a good example of the necessity resting upon manufacturers of machinery for sustained technical development. The duplex boiler feeder, considered an improvement at the time of its introduction some 50 years ago because of its simplicity and more uniform delivery, was eventually taken up by numerous manufacturers, each of whom developed a complete line. The type became standardized, so that competition was close and severe. A comparison of the closely printed tabulations of sizes and models of duplex pumps, as catalogued by the dozen or so builders, will indicate the immense amount of money that was invested in drawings, patterns and manufacturing equipment, all now rendered practically obsolete, or at least greatly depreciated in value, by the perfection of the more compact, simple, reliable and efficient steam turbine-driven centrifugal boiler feeder.

Since it must handle a comparatively small amount of water against a relatively great head, the centrifugal boiler feeder should be fitted with small diameter impellers running at high speed. It is therefore well adapted for steam turbine drive. The two-stage pump has a capacity of 1600 gallons per minute against 700 feet head at 2800 r. p. m., and upon test gave an efficiency of 60 per cent. The pump is entirely independent of the turbine, a coupling being interposed between the pump shaft and the turbine shaft, and it could therefore have been driven just as well by electric motor or by rope or belt as by a steam turbine. The unit, however, realized the advantages peculiar to the centrifugal boiler feeder, viz., reliable and uninterrupted service with little, and often unskilled attention, absence of pulsation, shock, water hammer, vibration or over pressure in pipe lines, elimination of relief valves, suitability for use with automatic boiler feed regulators acting independently at each boiler and with feed water meters, close governing, either by speed governors or by pressure governors, freedom from injury by overloading, lightness and compactness, accessibility, elimination of valves, packings, sliding surfaces and air chambers, small upkeep and attendance expense due to simplicity and few wearing parts, lower cost of maintenance of piping system, small consumption of oil, efficiency, and in the turbine-driven type, ability to use superheated steam or to run upon either high or low pressure steam, oil-free exhaust and independence of the main units.

A still further development in the direction of compactness and simplicity is shown by the accompanying photograph No. 1093, illustrating a 3000 horsepower, two-stage centrifugal boiler feeder combined in one casing and on one shaft with a velocity-stage steam turbine. This unit weighs only about one-tenth as much as a duplex reciprocating pump of the same delivery and occupies only about one-eighth as much floor space and one-fifteenth as much cubical space.

The pump end contains two single-suction impellers cast from a special bronze and carefully finished to exact contours. Two impellers are used for pressures up to 200 pounds per square inch and three impellers for higher pressures. Single-stage boiler feed pumps have been built, but two or three stages are preferable because of the much longer life of the impellers at slower speeds. Each impeller discharges into a volute chamber by means of which the velocity in the water as it leaves the impeller is converted into pressure before the water is led to the eye of the succeeding impeller. This means of energy conversion is superior to the use of diffusion rings as it is efficient over a wider range of delivery, and more important still, does not involve the use of small and sharp parts like diffusion blades, which are subject to rapid erosion.

The pump is hydraulically balanced and only one pair of labyrinth rings, surrounding the suction opening is required for each impeller except the last, which has two sets of rings. The whole back of the impeller is subjected to a pressure equal to that existing at the periphery of the impeller, the same pressure acting on the front of the impeller, except for the area of the circle enclosed by the labyrinth ring about the suction opening. The last impeller, that is, the one from which the water is finally discharged, is equipped with two sets of wearing rings, one on the suction side and one on the reverse side of the web. As some water from the discharge of this impeller will leak between the wearing rings into the space back of the web, this impeller would be equally as unbalanced as the other impellers in the pump if there were no escape for the leakage water. To provide for diminishing the pressure in this balancing space as much as may be required to bring the whole series of impellers into balance, a leakage outlet is provided from which water can be conducted back to the suction of the first impeller.

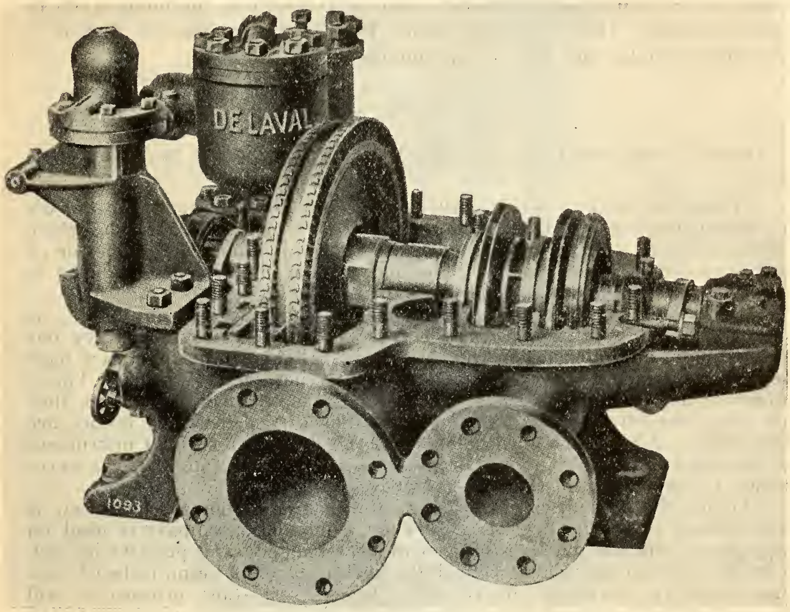
The outlet leakage takes place between two collars, one attached to the casing and the other carried on the shaft. When the shaft moves towards the discharge end of the pump this escape is closed off and the pressure builds up in the balancing chamber. If the shaft, on the other hand, moves toward the suction, this escape passage is opened wider, allowing the pressure in the balancing chamber to fall and at the same time the inleakage between the labyrinth wearing rings is decreased. By this means direct and positive balancing within every close clearance is secured with the leakage of but a small amount of water. The so-called natural balancing secured by the use of double-suction impellers in a multi-stage pump is in comparison uncertain and imperfect, besides involving an extra long shaft, heavier impellers and two pairs of wearing rings to each impeller.

The labyrinth wearing rings are readily renewable, the stationary ring of each pair being held in a seat in the casing and the rotating ring being screwed upon the impeller. The reduction of leakage secured by the use of intermeshing labyrinth rings is highly important for securing high efficiency in pumps of comparatively small delivery. With the labyrinth type of ring leakage path is so tortuous that very little water escapes even at high heads, although ample clearance is provided to take up expansion and contraction due to changes in temperature.

The suction end of the pump is adjacent the turbine and the shaft packing between the turbine and pump chambers is hence subjected to turbine exhaust pressure on one side and the suction pressure on the other. A simple packing is therefore sufficient, and in any case, any small leakage of steam in one direction or of water in the other does no harm. As the leakage space adjacent the balancing chamber at the discharge end of the pump is connected back to the pump suction, the packing about the shaft is subjected only to suction pressure. Aside from the intermediate packing already mentioned, there is only one steam packing, which is subjected to exhaust pressure.

The steam end of the unit consists of a velocity-staged turbine with either two or three rows of moving buckets, according to the steam economy desired. The nozzles can be proportioned for either high-pressure steam exhausing to feed heater or to condenser or for low-pressure steam exhausing to condenser, or the unit can be made interchangeable, thus permitting of a great degree of flexibility in plant design. Where the exhaust steam from the boiler feeder is consumed in heating feed water, the thermal efficiency of the turbine-driven boiler feeder is much greater than that of a boiler feeder driven by electric motor, or even than that of the main unit itself.

The unit is ordinarily fitted with a speed governor mounted upon the end of the shaft and when running at constant speed, the head varies with the delivery, as shown by the curved characteristic in the accompanying chart. As will be seen, the rise in pressure at reduced capacity is not excessive. Ordinarily, however, a pump governor controlled by the pressure at some point in the feed line near the boilers is employed to control the speed, giving a practically uniform pressure at all deliveries, as shown by the lower and straight line in the chart. In case of failure of the pressure governor to operate, the control of the unit is automatically taken over by the speed governor.



DE LAVAL COMBINED TURBINE-DRIVEN CENTRIFUGAL BOILER FEEDER WITH CASING COVER REMOVED, EXPOSING TURBINE ROTOR AND PUMP IMPELLERS. THE ROTATING ELEMENT CAN BE LIFTED OUT AFTER REMOVING THE BEARING CAPS

However, to provide against any possibility of racing, an emergency governor is also fitted. This consists of a pin contained within a hole bored diametrically through the shaft. This pin is held by a spring from flying out under the influence of centrifugal force. When the speed reaches a certain point, the spring is compressed so that the pin strikes a trip, releasing another spring by which the governor valve is closed at once and completely. Racing and excessive over pressure are therefore impossible. The normal speeds of these pumps vary from 1800 to 3500 r. p. m., according to pressure and capacity, and due to the heavy shafts employed are far below the critical speeds.

The bearings are of the straight, ring-oiled type, and like other parts subject to wear, such as the pump impellers, turbine rotor labyrinth rings and governor valves, are built to a limit-gage basis, so that they are all interchangeable. The entire rotating members and all wearing parts, with the exception of the governor valve, are accessible for inspection or removal upon lifting the casing cover and taking off the bearing caps, all of which can be done without breaking steam or water pipe connections.

In specifying the capacity of boiler feeders, the temperature of the water to be pumped should always be stated, as the capacity is nearly 50 per cent greater with water at 75° F. than with water at 210° F. For the same reason capacity and efficiency tests of a pump should be carried out with water at the temperature at which it will be received by the pump when in actual service. The De Laval Steam Turbine Co. announces that it is equipped to make such tests on the pumps which it builds.

AERONAUTICS

AERIAL NAVIGATION OVER WATER.—Mr. Elmer A. Sperry in April *Flying* says:

"The author, because of the development and practical application of his gyro-compass, has been brought to consider, more or less broadly, the whole science of navigation. For many decades past, this science has been one of high exactitude, limited only by the accuracy of the instruments used in obtaining its ground work or in giving it its base lines.

"It has long been known that the magnetic compass is unreliable; as ships represent greater and greater masses of steel, this inaccuracy has become more and more aggravated. Methods of checking its accuracy have been diligently sought for and made as nearly perfect as possible. These, however, depend upon observations and fail usually just at the time they are most needed; namely, when observations of the heavenly bodies are impossible. All this emphasizes strongly the desirability of an instrument of precision that will function as a compass. The adaptation of the gyroscope is found to fulfill this satisfactorily.

"Among the difficulties met in using the magnetic compass in the air is that known as the heeling error. When a magnetic compass is used on aeroplanes, and the machine is even mildly 'banked,' and persists in such a position for an appreciable period, the heeling error is found to be of such magnitude as to render the compass useless. In some instance it will amount to 360°, or around the entire circle, giving no clue whatever to the aviator as to the true azimuth, or where to stop on the turn and straighten out into the tangent. Thus the compass fails him utterly at just the critical time when it is most needed. After the tangent is persisted in for a sufficiently long time for the compass to settle, then and then only does it again become useful.

"Moreover, the lag or tardiness of action of the magnetic compass is a serious drawback. The magnetic compass, to be reliable, we find, must be of the so-called liquid type; upon spiralling and making two or three turns the liquid is found to take up the swivelling motion, carrying the card with it round and round, and becoming a serious disturbing factor for some time after the aeroplane straightens out on the tangent. This is not meant to imply that the magnetic compass is not an entirely useful instrument upon aircraft, but for best results is should be understood by the aviator and not relied upon when conditions are such that it is impossible for it to function.

"This condition has become so aggravating that the United States Navy is ordering a gyroscopic compass to be employed on aeroplanes. Much interest centers in the results that it will be possible to achieve by substituting this instrument for the magnetic compass under practical service conditions in the air. By extreme refinement in execution and design it is excepted by the Navy Department that the weight of this instrument will be reduced to 20 or 30 pounds.

"When one is navigating the air and holding an absolutely true course, that is, with the lubber line of the compass precisely upon the desired heading in azimuth, the direction of flight coincides with this heading, under the condition of absence of movement of the medium, namely the atmosphere, through which the flight takes place. At first thought, one would think that at the moment the medium itself was moving, and especially when this movement was normal or at a small angle to the direction of flight, the compass would instantly indicate the resulting deviation from the true course. This conception, however, is not correct.

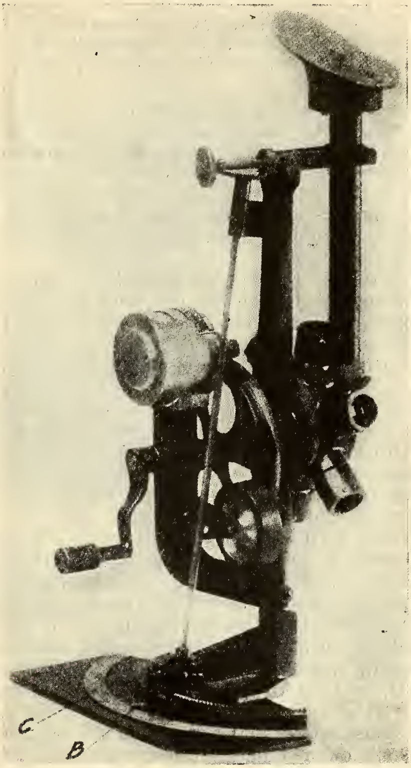


FIG. 1.—EARLY FORM OF DRIFT INDICATOR

"An aviator can hold his course true to the compass and still be following a course having a wide angle of deviation from the course in which he thinks he is flying. For instance, Carlstrom, in his noteworthy flight from Chicago to New York (equipped with instruments described later), found he was drifting 17½° when flying over Cleveland; his apparent course had to be changed to this extent to neutralize drift and to maintain the true direction along the south shore of Lake Erie. This angle was given him by his drift set, which, although not indispensable, he used throughout his flight. Carlstrom, however, had the shore line and general land marks to aid in his guidance. The case would have been different had he been flying at sea out of sight of land, where no lands marks could possibly be seen. Then certain aids to navigation are indispensable, and it is the province of this paper to discuss briefly some general aspects of these instruments and their uses, no effort being made to present a mathematical or an exhaustive treatise on the subject.

"Let us assume an aeroplane maintaing a compass course due north with the lubber line of the compass maintained at zero on the card, and for the moment the compass properly functions without variation or deviation. In still air the course of this machine over the surface of the earth will be north. But suppose, wholly without the knowledge of the aviator, the medium in which he is flying is itself in motion toward the east with a velocity equal to that of the aircraft. It is quite evident that, although he holds his course with exactitude, the craft itself is passing over the surface of the earth on a diagonal, that is, his actual course is northeast; the easterly component of his course depends upon the eastward velocity of the medium. Again, if this velocity be half of that of the aircraft, then his real course if 22½°, or 'north-northeast.' The question arises: how is the pilot to obtain this knowledge, or knowledge that he is drifting at all, so as to make the necessary correction of course in the absence of landmarks or other indications to guide him?

"A device, worked out by the author some time ago to give pilots this knowledge, has now come into general use, and is found to perform its function satisfactorily. Fig. 1 shows an earlier form of this device, in which a series of moving observing tubes acted as a stroboscope. By the backward movement of these tubes a point upon the earth's surface could be made to appear as though it stood still; the backwardly moving point of persistence of vision being exactly equal to the forward advance of the machine. Knowing the angular velocity of these vision tubes, or simple telescopes, and the altitude, the actual speed over the earth's surface was at once obtained. When compared with anemometer speed, that is, the real speed of flight through the atmosphere, a clew was at once available as to the actual movements of the atmosphere itself.

"This instrument was then carried a step further. The telescopes were furnished with cross-hairs and mounted upon a swivelling base with a pointer *B* moving over an azimuth scale *C*. When the slow motion of the telescopes was arrested and one telescope furnished with one or more fore-and-aft cross-hairs pointed directly downward, it was found easy to make a peculiar reading known as the 'stream-line observation.'

"When one is looking downward at the surface of the earth, through a tube or telescope, if, instead of looking for specific objects, he simply observes the passage of *all* objects across the field of the tube or telescope, he at once becomes conscious of the passage of all of these objects taking place in certain clearly defined parallel lines, which I have denominated 'stream-lines.' When one gets somewhat familiar with this kind of observation, he can see almost nothing but these stream-lines, and the nearer the surface or greater the speed, the more tense and clearly defined these lines become. Now, if a good, heavy cross-hair be stretched across the tube or telescope, and the tube be made so that it can be rotated upon its major axis, then it is found easily possible so to rotate the tube as to bring the cross-hair exactly coincident or parallel with the stream-lines.

"The rotating tube or telescope is furnished with a stationary scale, the zero of which is coincident with the longitudinal axis of the aircraft. By taking readings on this scale with a pointer on the tube opposite the cross-hair, it becomes easy to determine the angle between the stream-lines and the major axis of the aircraft, since the latter always lies in the apparent direction of flight, the angle being between the stream-lines, or actual direction of flight, and the aircraft. The determination of such an angle as this is extremely useful, as it at once gives the aviator a clew as to what change to make in his course so that his direction of flight is such as to neutralize the drift of the medium through which he is flying, his actual course being thus brought into exact harmony with the direction required to reach his destination.

"In securing this parallelism the pointer *B* is swung upon the scale *C* and the angle of drift in degrees can be immediately read on the scale from the longitudinal axis of the aircraft. Many surprises are in store for the pilot or observer when he first makes this observation, as he often is certain that it cannot be correct. He cannot believe it possible from his compass heading, to which he is holding with great accuracy, that he is actually making headway at so large an angle from its readings. And if he has had experience at sea with the compass, this impression is all the more startling, because it is always true that a ship is traveling practically on the exact course indicated by its compass. But here the pilot is holding his course absolutely true to the compass, and yet the drift indicator shows a quite different condition of affairs; namely, that he is actually traveling at a considerable angle to his supposed course.

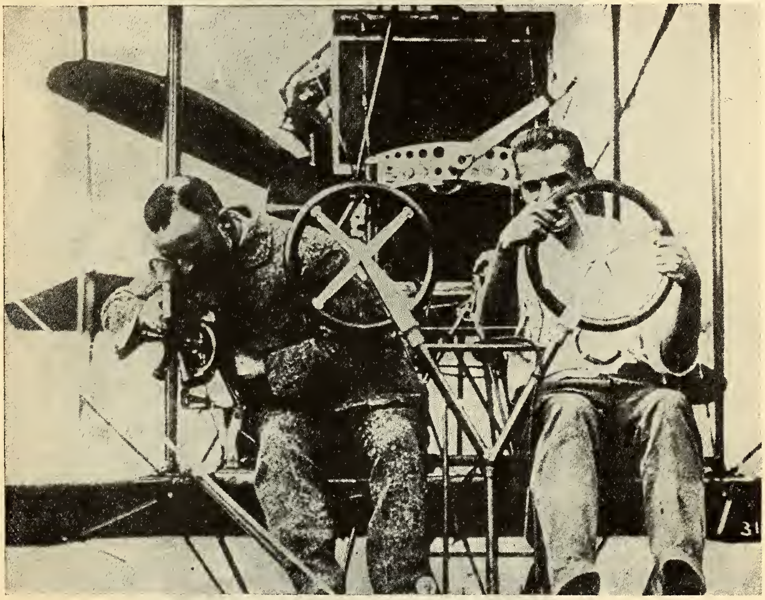


FIG. 2.—DRIFT INDICATOR IN USE BY NAVIGATOR

"Fig. 2 shows the instrument described mounted upon an aeroplane and being used by the observer. The observer in this instance is Captain Creagh-Osborne, R. N., head of the hydrographic office of the British Admiralty. The pilot is Lieutenant Towers, U. S. N.

"With the earlier instruments the pilot would change his course and by trial in error finally reach a flight heading on the compass card, resulting in actual headway of the aircraft along the true course; that is, along the line that he was originally instructed to pursue to reach the desired destination.

"Thus it will be seen that the accurate determination of drift is an important factor in aerial navigation. It is true that observations are somewhat more difficult at great heights and over rough water, but one soon becomes accustomed to obtaining a mean reading, which is found to be very accurate, it has also been definitely ascertained that when flying with the automatic pilot, with which side disturbances are practically eliminated, the stream-line observations becomes very much simplified and accurate at practically all altitudes.

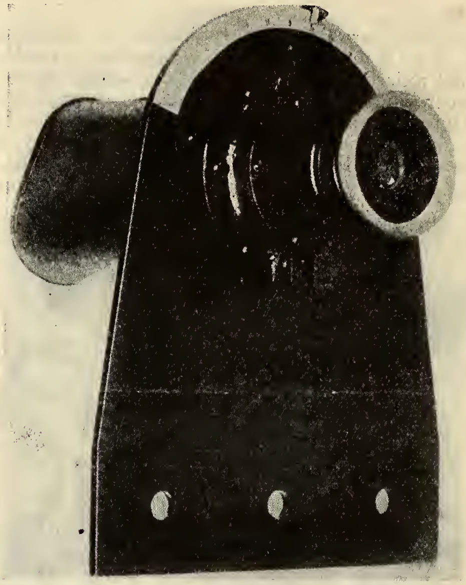


FIG. 3.—NEW TYPE OF DRIFT INDICATOR

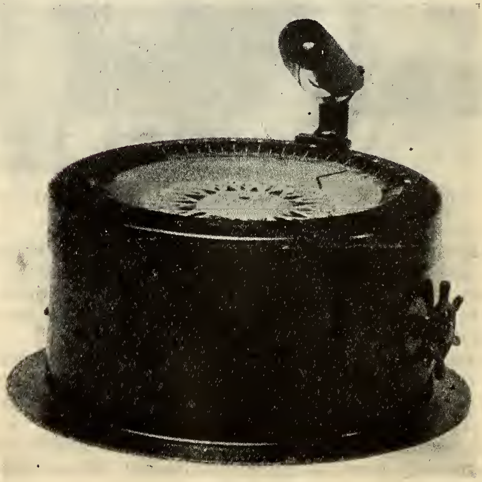


FIG. 4.—DRIFT COMPASS WITH ADJUSTABLE LUBBER LINE

"A later form of the apparatus is shown in Fig. 3, in which a single stationary telescope, provided with the cross-hairs, is employed for the moving series of telescopes, inasmuch as the drift factor is found to be of far more importance than the actual speed of advance with reference to the earth's surface.

In Fig. 4 is shown a drift compass with an adjustable lubber line and with a little tiller wheel extending from the side of the case, by means of which the lubber line is set from the indications up on the scale *C* of the drift indicator. The scale upon the bezel of the compass is used for reading the deflection of the lubber line. Care must be taken in moving the lubber line to be sure that its setting is correct as to direction, and that it is not set on the right side of the zero when it should be on the left.

"A pilot, especially when without the automatic pilot and working alone, has enough cares without the added one of worrying whether the compass has been accurately synchronized with the drift indicator, and whether the direction of the adjustment is also correct. So my son Lawrence conceived the idea of coupling them mechanically, in order that they might be at all time automatically synchronized. The combined instrument, namely, the synchronized drift-set has now become the most useful form of the apparatus and the one most widely adopted. In this instrument the most minute azimuth movement introduced by the observer at once causes a corresponding alteration of the position of the lubber line of the compass, thus eliminating the possibility of error either in the direction of this movement or in its exact amount. This is found very practical, inasmuch as it vastly simplifies the pilot's operation, he needing only to continue without change to hold the lubber line upon the originally selected point on the compass card. The fact that the lubber line is displaced, especially if under the control of the observer, is something with which the pilot has nothing to do and is not concerned—he simply continues on his original compass course. This arrangement automatically introduces all of the deviations in course

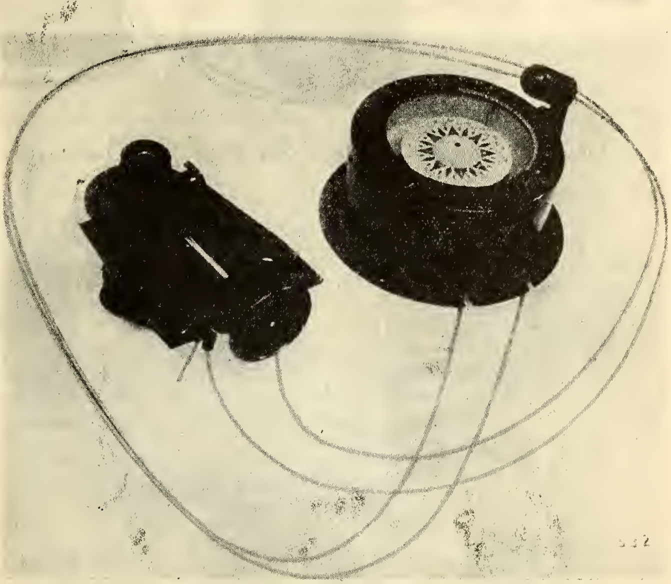


FIG. 5.—SYNCHRONIZED DRIFT SET

to correct fully for drift, and is found to save much valuable time and fuel, and to allow the pilot to reach his destination by a true meridional course. With the actual drift known and corrected for, the correction that should be given the anemometer speed, which is always known to the operator, can be determined easily. Thus he has all the knowledge of the actual forward advance that is roughly necessary in short flights.

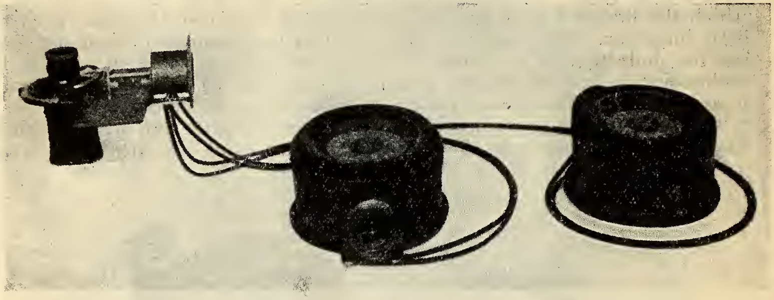


FIG. 6.—SYNCHRONIZED DRIFT SET WITH TWO COMPASSES

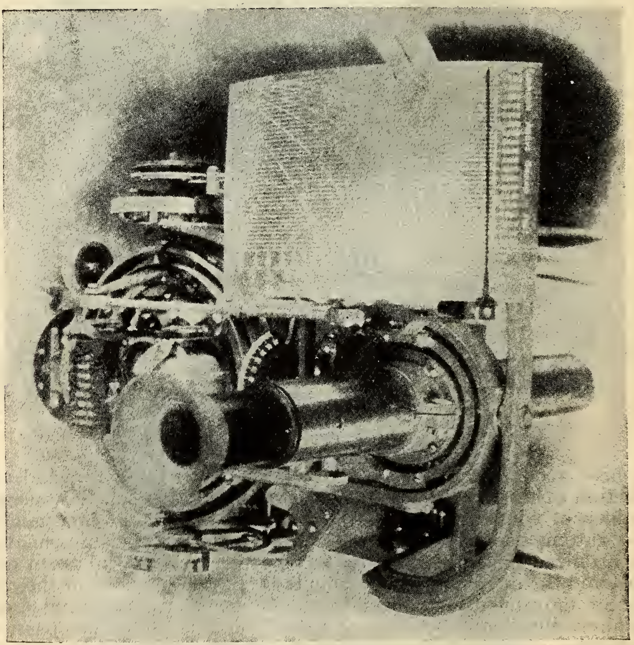


FIG. 7.—SPEED INDICATOR USING STROBOSCOPE METHOD

"Fig. 5 shows the synchronized drift set with the observing telescope to the left, the compass to the right, and the compass lubber line thrown around 30° from the longitudinal axis of the aircraft indicated by the zero on the scale shown on the bezel. When the observer and the pilot sit in tandem relation in the aircraft, then it becomes desirable that each has a compass. We have made a number of sets, Fig. 6, in which two compasses are synchronized by means of a single drift indicator.

"We will now turn our attention to some refinements of the use of this apparatus when one is flying under actual service conditions over water. It is always wise to note the direction of the wind before starting, and also something as to the length of the wave, that is, the distance from wave crest to wave crest. A pilot of seaplanes or an observer, or both, should become accustomed to estimating this wave length or distance from crest to crest, say for this country, in feet, and should also invariably note the direction of the wind in terms of compass azimuth.

"In leaving the surface of the water, it should also be the duty of the personnel to see that the aneroid is adjusted exactly on zero. This observation should also be made whenever the plane is brought close to the surface, thus eliminating effects of changes in barometer in determining actual heights. The uses of these observations will be presently apparent. Let us now divide the problem of speed control into two classes.

"In the first class stroboscope methods are used. One form of the stroboscope is shown above in Fig. 1. Another instrument working upon this principle is illustrated in Fig. 7. Still another simpler form is in course of being developed for the United States service. The speed with reference to the surface of the earth can be ascertained with a good degree of accuracy over water. It is, of course, necessary to know the movement of the sea, or, rather its apparent movement, as for instance, the movement of the wave crest. In every instance the actual angular velocity of the stroboscope, or of the apparent passage of the earth's surface, and the careful reading of the aneroid are used as prime factors.

"The second class is where a close approximation of the actual speed can be ascertained quickly. Using the anemometer speed as a base, we determine whether the actual speed is the same as, or greater or less than the anemometer speed, and also obtain a close approximation of how much the variation is. It is assumed that the anemometer speed is always available to the navigator. A good anemometer is known to possess a high degree of accuracy.

"When the wave crests are small and cannot be seen directly, the same telescope that is used to ascertain the stream-line direction can be employed to observe the direction of the wave crest. I have had some discussion as to visibility of the wave crests with some who are unfamiliar with it, but, as a matter of fact, the wave crests are clearly visible. Fig. 8 is a reproduction of a photograph taken from a considerable altitude, and shows how clearly visible these wave crests are. They are an excellent indicator of two valuable factors: First, from their length from crest to crest we can ascertain their speed; and, second, their direction always lies directly normal to that of the wind. In all probability there also exists a reasonable relation between the velocity of the wind and the velocity of the waves, but we will not concern ourselves with this at the present time. The waves shown in Fig. 8 are about 10 feet from crest to crest, giving us a velocity of 7.2 feet per second. At first glance it might be difficult to know in which direction these waves are moving, but with the conditions such as in Fig. 8, there is the simplest possible clew consisting of the vapors flowing from the funnels of the two small craft shown. The line of vapors is seen to be normal to the line of the wave crests.

"Bearing these points in mind, the following rules can be applied to aerial navigation:

"1. Note on which side of the keel line or longitudinal axis of the aircraft lies the actual or true course, or on which side of the zero on the bezel of the drift compass lies the adjustable lubber line. This is the 'drift side,' and can, of course, be to the right or to the left. (The zero on the bezel indicates the keel line.)

"2. Note closely the apparent alignment of the wave crests while the aircraft is being maintained on its course.

"3. Note the relative angle between the wave crests and the keel line, and also between the wave crests and the 'drift line,' or the alignment of the adjustable lubber line.

"With these observations well in hand, the following deductions can be made:

"(a) If the crests lie within the angle between the keel line and the drift line, then the real speed is approximately identical with the anemometer speed. If these crests exactly bisect this angle, then the real speed on the actual course is exactly the anemometer speed.

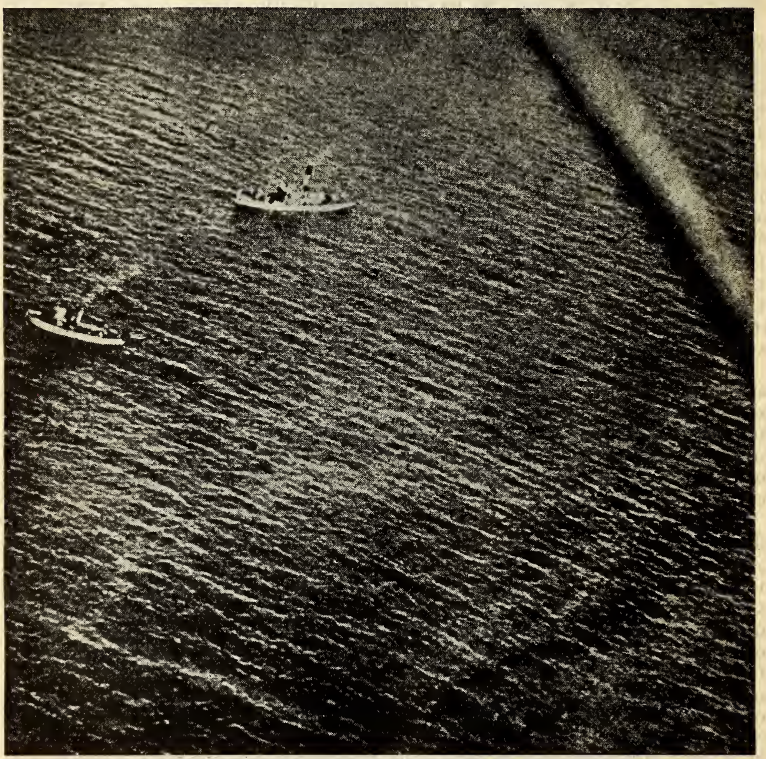


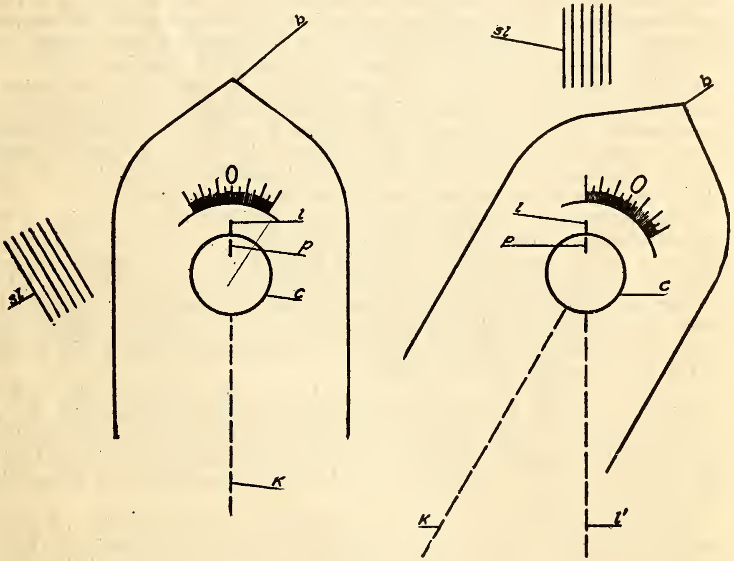
FIG. 8.—WAVE CRESTS VIEWED FROM AEROPLANE

"(b) If the aft ends of the crests be toward the drift side then the actual speed over the earth's surface is always greater than the anemometer speed, because of an abaft wind.

"(c) If the aft ends of the crests are away from the drift side to a greater extent than is the true course angle or drift line, then the actual speed is always smaller or less than the anemometer speed, because of head wind.

"(d) If the crests lie exactly at right angles to the keel line, of course no drift angle exists, and the stream-lines lie parallel to the keel. However, it is always known which way the wind is blowing, from observations made before starting (which have been referred to), and in this manner we at once know whether we are passing over the surface of the earth at a faster or a slower speed than that indicated by the anemometer. Suppose, however, the navigator should have mislaid his data or forgotten the direction of the wind or its true azimuth. A clew to the direction can be obtained as follows: Change the course sufficiently to make the stream-lines veer away from the keel line. If the leading ends of the stream-lines are seen to move to the left for a right turn, the wind is a *following* wind, and if they move to the right for a right turn it is a *head* wind. Of course, for a left turn just the reverse is true. As to whether the velocity is great or little can easily be judged from the sea conditions.

"In Figs. 9 and 10, *b* is the forward part of the flying boat in outline; *k* is the keel line; *l* is the lubber line; *c* is the compass card. The zero on the compass bezel is on the keel line; *sl* indicates the stream lines and their direction; *p* is the point on the compass card indicating the desired direction of flight. In Fig. 10, *l* and *l′* indicate the 'drift line,' or true course.



FIGS. 9 AND 10.—OUTLINE OF FRONT PART OF FLYING BOAT

"As a still further refinement in ascertaining speed and direction, account should be taken of the movement of the wave crests themselves. This can ordinarily be found by determining the length between the crests, inasmuch as the velocity varies about as the square root of the wave length or distance between crests; the velocity in feet per second equals the wave length in feet at a point where each is expressed by the figure 5⅛—to be accurate, 5.123—that is, when these measure the distance from crest to crest, their velocity is also 5.123 feet per second. The 10-foot wave shown in Fig. 8 would therefore have a velocity of about 7.2 feet per second.

"We know the approximate length of this wave, having observed it before leaving the water; but if this has not been done, we can ascertain the length by dropping down near enough to the surface of the water to get a fairly accurate determination of the mean lengths between wave crests, taking this opportunity also to note that the aneroid is at zero. Having thus determined the velocity of the wave crests, we proceed to determine the necessary corrections.

"With reference to the speed, a correction should be made in proportion to the sine of the angle between the wave crest and the stream-line. To obtain the actual speed over the earth's surface, we should add the speed of the wave crests to the speeds obtained by stroboscopic methods in all cases of following wind, and subtract in case of head wind. The amounts that are subtracted are equal to the velocity of the wave crests only when the wave crests are at right angles to the stream-lines. At other angles the velocities subtracted or added are as the sine of the angle between the wave crests and the stream-line.

"As to the influence of the moving wave crests on the apparent direction of the stream-lines, it should be noted that (a) the angle between the stream-lines and the wave crests should be determined; and (b) starting with the position where the stream-lines and wave crests lie parallel to each other, as being the condition of maximum correction, we derive this correction from the known velocity of the wave crests. The correction, it should be remembered, is an angular correction to be applied to the apparent direction of the stream-line, resulting in a refinement of heading, which gives the true meridional course to the point of destination.

"This correction is always proportional to the ratio of the velocities of wave crests and aircraft determined, say by stroboscopic methods or by the anemometer, after the proper corrections have been applied. When the wave crests and stream-lines are parallel, this ratio is applied directly. When other angles obtain, the correction should be multiplied by the cosine of the angle between the wave crests and the stream-lines.

"One factor now remains, that is, as to whether the correction is to be applied clockwise or anti-clockwise. Assuming the observer is facing the direction of the stream-line or actual flight, then if the wind is from the right the correction should be counter-clockwise, and if from his left the correction should be clockwise. The navigator knows the direction of the wind from his original observation of its true compass azimuth before rising from the sea. If, however, this information is lacking, the direction of the wind can be found as follows:

"Notice the direction of the stream-lines with respect to the keel line. If this is to the left, the wind is from the right; and if to the right, the wind is from the left. If the stream-lines happen to be parallel to the keel, then the aeroplane should be veered to the right or to the left until the keel line and stream-line lie at an angle to each other, whereupon the above observation can be made.

"There are a number of other interesting aids to navigation of aircraft, such as clinometers, gyroscopic base lines, and artificial horizons, banking indicators, angle of incidence indicators, and the like, but their uses are apparent, and need little explanation."

BATTLEPLANES.—The following article by Rear Admiral Bradley A. Fiske, U. S. Navy, is reprinted from *Flying* for April:

"In view of the backward state of our defences, especially on the land, I would like to suggest the advisability of considering whether it is not possible to devise some means that is powerful and easily gotten, in order to supplement our present means: Something that can do for our army and navy service a little like what the *Monitor* did in 1862. The exigencies of the Civil War, especially the menace given by the *Merrimac,* caused the hurried building of the *Monitor,* which Ericson had been trying to have built for several years. The *Monitor* fulfilled her mission perfectly. Had the *Monitor* not been built, the *Merrimac* would have prevented the blockade of the southern coast, the south would have been able to sell her cotton; would have received money, munitions and equipments in exchange, and would probably have been recognized by some of the European powers, and been able to resist successfully the armies of the north. It was the *Monitor* that cast the deciding vote in our Civil War.

"As the submarine threatens to cast the deciding vote in the present war and as the *Monitor* has been expanded into the dreadnought, it may be profitable to ask what is the inherent cause of the efficiency of those weapons. Clearly it is the same cause as makes any weapon efficacious; that is concentration of great power in a small space, combined with great mobility. The combination permits of the application of great force on a given spot at a given time.

"In 1911, I published an article called 'Naval Power,' in the United States Naval Institute, in which I pointed out this fact, and suggested what a battleship on land could accomplish, if such a thing could be constructed. The *Popular Science Monthly* republished this suggestion in November, 1915, and a few months later, the so-called British tanks appeared, which are small land battleships.

"Now the unevenness of the ground is a great obstacle in the way of making land battleships very large and fast, and seems to prevent armies from using units as powerful and swift as navies use. This is unfortunate for a country like the United States, for two reasons: One reason is that the length of our boundaries on the ocean and on our northern and southern frontiers is so great, and the average distance to the boundary from places within the country is so great, that it would be highly advantageous for us to be able to move powerful units at great speed; another reason is the natural inventiveness of our people would enable them to produce very effective land battleships, if the difficulties were not absolutely insuperable—as they seem to be.

"My life in the navy brought me into intimate contact with all the advances in naval construction—from the little *Saratoga* in which I made my first cruise as cadet midshipman to the superdreadnought *Florida,* which was my last flagship. The military value of concentration was of course impressed unceasingly upon me, and with it a realization of the fact that the main aim of strategy and tactics is to bring a preponderating force to bear on a given point, before the enemy can prevent it. To do this, we need concentration of power in as few units as possible, and ability to move those units as rapidly as possible. *Power and mobility are the prime agencies of the military art.*

"Now at the present time the unit in all armies is the soldier and his musket. We seem tied down to that slow and feeble little unit. But are we really? The navy seemed tied down to the little sailing frigate; so much so that even after the *Monitor's* achievements in our Civil War, we returned to the sailing frigate. The competition of nations, however, forced us to take up larger units, and now we have the *Pennsylvania.*

"Is there no way in which this great inventive and constructive nation can get some more powerful and mobile unit than the soldier and his rifle? Can we get more defensive usefulness out of the intelligent collegian, technician or chauffeur than by marching him in a regiment with a little musket in his hand? Is there no device by means of which large units of power can be carried which is not subject to the limitations of speed and size that restrict a land battleship to small dimensions.

"Yes, and that device is now being used in Europe, after having been designed and manufactured in the United States. It is called the battleplane. Such a device recently carried 27 passengers, and another, an air cruiser, carried 3500 pounds of crew and equipment. Some of the largest battleplanes are being constructed in the United States and one of the aeroplane manufacturers states that he can easily build a battleplane capable of carrying and launching a full size torpedo weighing 3500 pounds.

"If battleplanes have a field of usefulness in Europe, where the distances are very small and where the organization training and strategical employment of large armies have reached a high state of development, do they not have a much wider field in the United States, where the distances are relatively enormous, and where the organization, training and strategical employment of large armies are arts almost unknown? Is it not possible that an immediate and strenuous development of battleplanes might save us from invasion, just as the *Monitor* saved us from the *Merrimac?*

"In case our fleet is defeated in the Atlantic during the next year, we shall not have an army that could stand up against any European army that might land on our shores. But if we had a division of, say, 100 battleplanes near New York, costing about three million dollars, we could certainly prevent the disembarkation, transit in boats to the shore, and landing of any force of soldiers, especially if the battleplanes were assisted by, say, 200 small aeroplanes, dropping bombs. Similar divisions at other points, including one at the Panama Canal, could perform similar services, and the great speed of the aircraft would enable each division to guard a long extent of coast. A division of 100 battleplanes could go from New York to the Capes of the Chesapeake in three or four hours. They could be equipped with 3-inch guns. The muzzle energy of 100 3-inch guns is equal to the muzzle energy (and therefore destructive power) of about 60,000 soldiers' rifles.

"The size and power of the aeroplane has already gone far beyond the limits set for its possible development by certain engineers only three years ago. The practical difficulties of making it larger still are quite apparent; yet, nevertheless, no theoretical limits to its size and power have yet been accepted by aeronauts. That the aeroplane is now the best single weapon against the submarine is conceded. That the aeroplane, and especially the battleplane, will rapidly advance in size and power within the coming year and afterwards, is the mature belief of many aeronauts; should we not therefore immediately investigate its capabilities, not only as a scout and accessory, but as a major instrument of warfare?

"I do not suggest the abolition of the soldier and his musket; but neither do I suggest the abolition of the boat pulled by the oars of rowers. I merely suggest that, as the boat pulled by rowers was superseded for large operations by the sailing ships, and as the sailing ship was superseded by the more mobile steamer with broadside guns; and as this type of warship was superseded by the turret ships, and as the turret ship has been expanded into a superdreadnought, so the soldier and his musket may be superseded for important operations by the immeasurably more powerful and mobile battleplane.

"If so, the more quickly we act, the better. 'Hindenburgh never sleeps.'"

NAVAL ANTI-AIRCRAFT DEFENCES.—Mr. Henry Woodhouse, writing in *Flying,* discusses anti-aircraft defences as follows:

"War with Germany brings the possibility of aerial raids on American cities by German aircraft, which can start from ships at sea or from temporary bases. Such a possibility was discussed in Congress in February, 1917, and was admitted, and as a result, the number of anti-aircraft guns for the defence of naval stations was doubled. Since then reports have been printed that Germany is building ten large submarines for the special purpose of carrying seaplanes for raiding purposes. As Mr. Alan R. Hawley, the president of the Aero Club of America, has pointed out, under the present conditions, until our anti-aircraft defences are developed and anti-aircraft gunners have experience, the worst that could happen to enemy aviators, who have found it necessary to land after dropping bombs on American cities, is that they would be made prisoners.

"Much of the work of operating the anti-aircraft defences will have to be done by the Naval Reserve Flying Forces—how much will be shown by the following definition of what naval aircraft defences consist of.

"Naval anti-aircraft defences are divided into three classes, as follows:

"(1) *The Flying Defences,* consisting of fighting aircraft, including fast armed fighting seaplanes and armed dirigibles, which on receipt of wireless messages from ships at sea, or through other means, that aircraft are on their way to attack, fly out at sea and endeavor to shoot down the hostile aircraft or make them retreat.

"The purpose of anti-aircraft defences is to prevent the enemy's aircraft from reaching our shores and doing damage. The real victory rests not in repulsing them or even destroying them after they have reached our shores, because if they succeed in reaching our shores we are forced to fire in the sky and bear the responsibility of the damage done by the fall of our own shots; and the fall of the enemy's bomb-laden aircraft, if it is hit, may do extensive damage.

"(2) *The Floating Defences:* Consisting of anti-aircraft guns mounted on different types of ships, stationed out at sea as far as possible from the shore, so that in case the aircraft is not hit, wireless messages can be sent to other anti-aircraft ships to be on the watch-out, and to summon aircraft to fight them. Closer to the shore fast motor boats with anti-aircraft guns of smaller caliber can be of great value.

"(3) *Shore Anti-Aircraft Gun Defences,* consisting of anti-aircraft guns, searchlights, 'listening towers,' equipped with huge microphones to magnify the sound of the motors of the approaching aircraft, and range-finders and other instruments for gauging distances.

"The Sixty-fourth Congress at its second session, which ended March 4, 1917, allowed $3,800,000 for anti-aircraft guns for the defence of naval stations, to be available until 1920. The year before, provision was made for 134 anti-aircraft guns to mount on ships.

"These guns are 3-inch 50-caliber guns, firing a 13-pound shell or shrapnel. The movement is so arranged that the gun can fire from 10° depression to 90° elevation, and at any angle of train. The gun is semi-automatic, allowing a rate of fire of more than 20 shots a minute under favorable circumstances.

"These guns have been mounted in many U. S. ships, including the U. S. S. *Pennsylvania,* the flagship of the Atlantic fleet, and ships of the *Texas* class, as well as destroyers of the *Davis* class.

"At the beginning of the war, the German Navy was using 4.1-inch guns manufactured by the Krupps, each of 45-caliber, firing projectiles weighing 34 pounds, with a muzzle velocity of 2630 feet to a height of 12,000 feet. The rate of fire was 15 shots per minute. Since the beginning of the war reliable reports state that other guns have been put in use which are capable of firing as high as 28,000 feet, although the practical limit of vision may be placed at between 10,000 and 12,000 feet.

"F. W. Lancaster, the British aeronautic authority, states that:

"'Anti-aircraft firing is very inaccurate, hence numbers are employed to compensate.

"'The German guns are: 71 mm., firing 20 to 25 shots per minute, shell weighing 11 pounds, vertical range 19,000 feet; speed of motor car 60 km. per hour, climbs grade of 1 on 5, with 12 mm. armor; submarine anti-aircraft gun, 3.5-inch caliber, 20 to 25 shots per minute, muzzle velocity 2500 f. s., weight of projectiles, 20 pounds; Krupp, 6-inch, firing 35 pound projectile discharging smoke trail is mainly used by coast defences and by the navy.

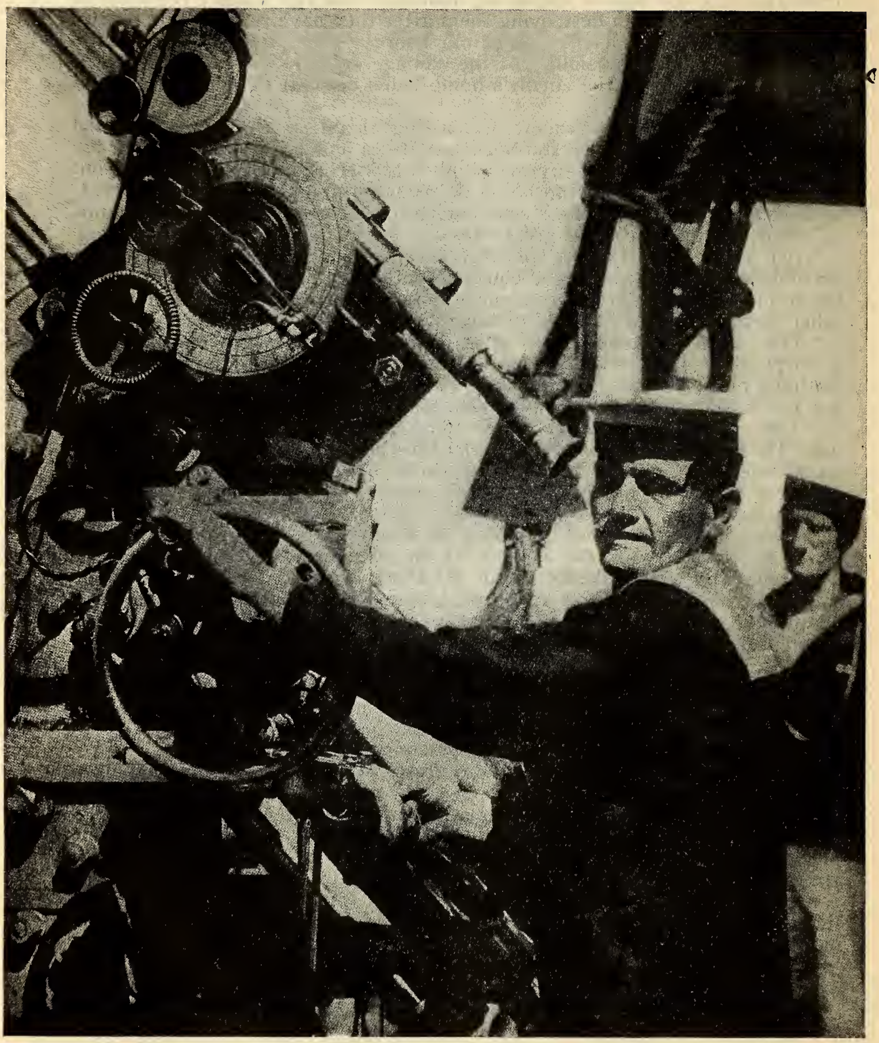
"'The Ehrhardt factory at Dusseldorf makes various anti-aircraft guns, of 2-inch to 6-inch caliber.

"'The most remarkable of these is of 2.6-inch caliber, weight of projectile 9 pounds, elevation 75°, muzzle velocity of 2000 f. s., vertical range 17,500 feet. Three classes of projectiles—shrapnel, smoke shrapnel, and "balloon grenade"—are used. This gun is mounted in an armored car, weighing complete about seven tons.

"'The Skoda works, Pilzen, Austria, makes a 1.5-inch gun with a muzzle velocity of 3000 feet per second, weighing complete about 1350 pounds. It can be carried on any high-powered motor car.'

"The French naval aircraft guns are very similar to the 3-inch anti-aircraft guns.

"Some British and German submarines have been equipped with disappearing guns, which fit into special hatches. As soon as the submarine has



THE ANTI-AIRCRAFT GUN ON BOARD OF A BRITISH SHIP AND THE BLUEJACKET WHO OPERATED IT WHEN IT BROUGHT DOWN THE ZEPPELIN "L-20" NEAR SALONICA. THIS OFFICIAL PHOTOGRAPH SHOWS THE TELESCOPIC SIGHTING APPARATUS OF THE GUN AND PART OF ITS RANGE-FINDING MECHANISM, THE LAYING WHEEL AND THE FIRING KEY AND PISTOL-GRIP, WHICH ARE HELD BY THE GUN-LAYER'S RIGHT HAND. SEE PAGE 1058 FOR PHOTO OF THE GUN AND THE CONTROL OFFICER reached the surface, the gun hatch opens and automatically places the gun in firing position. While it is true the submarine faces more danger in fighting a seaplane than is the case vice versa, there have occurred in the great war several encounters of this kind, and on April 30, 1916, a German submarine shot down a British seaplane.

"The anti-aircraft guns mounted on British and French warships have been responsible for bringing down a number of Zeppelins, and a large number of aeroplanes. On May 5, 1916, two Zeppelins were brought down, one by a British light cruiser off the coast of Schleswig, and another at Salonica, shot down by the anti-aircraft guns mounted on the French battleship *Patrie*.

"While the introduction of aircraft in military operations has practically removed the lines of demarcation, and we find an overlapping co-operation between the air services of armies and navies, it is best, for our purpose, to adopt the old rule that a navy's duties begin outside of the three mile limit, but it must protect and defend the navy yards, naval stations, and magazines.

"As Senator Swanson stated on the floor of the U. S. Senate on March 1, 1917, 'The defence of New York, the defence of other cities, and all inside of the three-mile limit, is left to the army, except the navy yards and magazines.'

"When the appropriation for 224 3-inch anti-aircraft guns for the defence of naval stations came before the House of Representatives on February 6, 1917, and a point of order was made by Congressman J. J. Fitzgerald, that 'it is a part of the coast defence to provide anti-aircraft guns for these naval stations and not within the jurisdiction of the Committee on Naval Affairs,' the chair ruled that 'the defence of naval stations within those stations' were 'within the jurisdiction of the Committee on Naval Affairs.'

"Necessity often changes laws. The necessity of defending London from Zeppelin attacks made the authorities set aside precedents and appointed Sir Percy Scott, the naval authority, in charge of the anti-aircraft defences of London, a position which he held until February, 1916. Then, on February 16, the entire anti-aircraft defences were put in charge of Field Marshal Viscount French.

"Following is part of Viscount French's illuminating official report on Home Defence to the Secretary of State for War, dated December 31, 1916:

"'At the date of my assumption of command, the question of the anti-aircraft defences of the country was under consideration.

"'On February 19 it was decided that the London defences should be handed over to me, and on February 26 it was further decided that I should be responsible for the whole of the anti-aircraft land defences of the United Kingdom. Previous to this I had given considerable attention to the subject of anti-aircraft defence, and I submitted a scheme for consideration, which was approved and has been carried out.

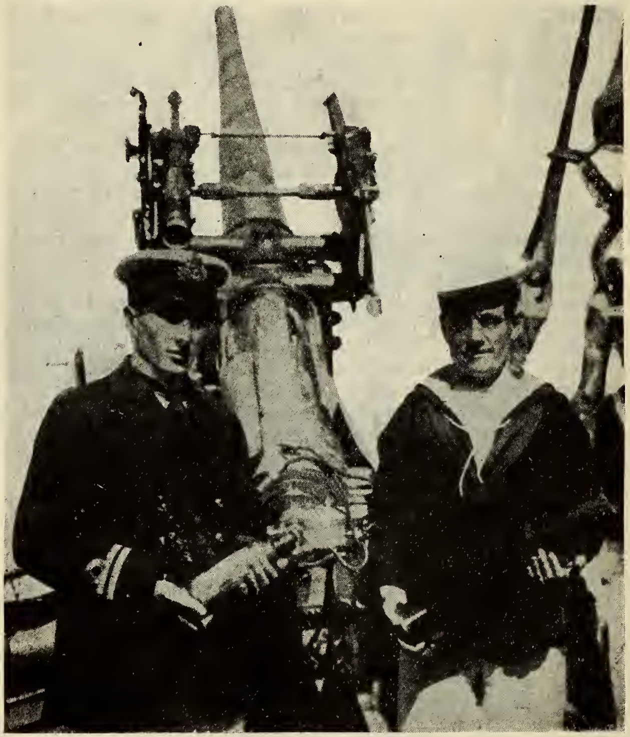
"'During the winter there was little hostile activity in this direction, but since I assumed charge of these defences enemy airships and aeroplanes have invaded the country whenever conditions have admitted. The numbers of airships taking part in a raid have varied considerably. On April 3 only one was engaged, while in the raid of September 2-3 not less than 12 ships are believed to have taken part. In all, 19 raids have been made by aeroplanes. The damage done has been comparatively small, and nothing of any military importance has been effected.

"'Taken as a whole, the defensive measures have been successful. In very few cases have the enemy reached their objective. They have been turned, driven off, seriously damaged by gunfire, and attacked with great success by aeroplanes. Seven have been brought down, either as the result of gunfire or aeroplane attack, or of both combined.

"'The work of the Royal Flying Corps and the Gun and Light Detachments, including the Royal Naval Anti-aircraft Corps, has been arduous, and has shown consistent improvement; the guns and lights have been effectively handled, and the pilots of the Royal Flying Corps have shown both skill and daring. All are deserving of high praise.

"'Close co-operation with the navy has been maintained, and the R. N. A. S., by their constant and arduous patrol work on the coast and overseas, have shared in successful attacks on the enemy.'

"It is seen by this report that there is the closest of co-operation between the British Army and naval air services in maintaining the anti-aircraft defences. The following part of the official report of the committee which investigated the Royal Flying Corps in 1916, gives further information regarding the respective share of the two services in the anti-aircraft defences of Great Britain:



LIEUTENANT OF THE ROYAL NAVY WHO, AS CONTROL OFFICER, REGULATED THE FIRING AND A. B., WHO LAID AND FIRED THE ANTI-AIRCRAFT GUN WHICH BROUGHT DOWN THE "L-20." THE OFFICER IS HOLDING ONE OF THE SHELLS, THE A. B. HOLDING THE CARTRIDGE-CASE OF THE GUN

"'A good deal of confusion has arisen upon the subject as to whether the air services of the army or the navy are responsible for home defence, or whether the responsibility is divided. The truth is that the navy was entirely responsible till the middle of February last. Since that date the responsibility has been divided. The navy is responsible until hostile aircraft reach our shores. From that time the army is responsible. It is hardly necessary to state that if a naval machine was attacking hostile aircraft it would not cease to do so because the aircraft crossed the boundary line (high-water mark), nor would an army machine cease to pursue hostile aircraft when it passed over the line seawards.

"'The Royal Flying Corps is not responsible for anti-aircraft guns. It has no control over them. Nor has it any responsibility for or control over the searchlights which work in connection with those guns. The Royal Flying Corps now has, however, its own searchlights wherever home defence machines are maintained.

"'The defence of the London Area is under the immediate control of the Commander-in-Chief for Home Defence. In other areas, subject to his general control, it is under that of the army officers in command of the particular anti-aircraft defence areas. Those areas are not co-terminous with the districts commanded by the officers in charge of home defence from attacks other than by aircraft.

"'It seems desirable to mention that, while the navy was still solely responsible for home defence, Lord Kitchener issued an order that army aeroplanes were to render all possible assistance, an order which was very willingly obeyed.

"'The navy have aerodromes for their own purposes along the coast, and we think it reasonable to assume, although we have no knowledge on the subject, that, now that the army is responsible for home defence, from the coast inwards, a similar order has been issued to the navy.

"'Having regard to the limitations imposed by the number of aeroplanes, pilots, and night landing places as yet available, we do not know that, so far as the Royal Flying Corps is concerned, anything more can be done.

"'It ought, we think, to be generally known that home defence machines and pilots are not now stationed at every aerodrome. It must not be supposed that, because aeroplanes are seen flying freely day by day from a given aerodrome, there are necessarily any aeroplanes kept at that aerodrome fit for night flying or any night flying pilots there to fly them. Home defence machines, with their pilots, are now grouped at various centers, a plan which, after careful consideration, we approve.'

"In this report, which covers a dozen large pages in small print, is found the following report of the investigation of the complaint that no machines went up on the occasion of the raid at Dover by a German seaplane over Dover on or about January 31, 1916:

"'It appears that Dover is a Naval War Station, and that the Royal Flying Corps merely has a training and mobilizing ground there. On the date in question it happened that General Henderson was inspecting there. He had just gone into the mess-room when he heard the anti-aircraft guns firing. The only portion of the Royal Flying Corps at Dover at the time was a half-completed squadron ready to go abroad. Directly the guns were heard, the pilot on duty ascended in pursuit of the German seaplane, and was immediately followed by two naval machines, and these again by another army machine. It appears that the machines went up in the opposite direction to Dover, so were not seen by the inhabitants of that town. The day was rather misty and the German seaplane 8000 feet up, so that the British machines were unable to catch it. Another allegation was that the anti-aircraft guns fired at the British aeroplanes, and there is evidence which points to some rounds having been fired at one of the naval machines.'

"This brings up both the fact that there is close co-operation between the two British air services, and that there is danger of shooting at one's aeroplanes under certain conditions."—*Flying,* April, 1917.

Aircraft Brought Down in 1916.—According to official reports, during 1916 the British destroyed 247 and brought down in a damaged condition 142 German aeroplanes, and destroyed eight Zeppelins, four of which were brought down by aviators and four by anti-aircraft guns. The French destroyed 417 and drove down in a damaged condition 195 machines. Twenty Zeppelin raids on England, and six on France were reported in 1916. Hundreds of raids by German aeroplanes were reported, but only 11 cases where the German aviators succeeded in passing the three lines on anti-aircraft defences, and dropped bombs on English soil.—*Flying*, April, 1917.

OPINION OF JOINT ARMY AND NAVY BOARD ON AERONAUTIC SERVICE.—A report from the joint board of officers of the army and navy, relative to the development of the aeronautic service, includes the following:

"1. The board is of the opinion that the development of the aeronautical resources of the United States and their application in war to the maximum national advantage, can be accomplished best through the formulation of plans and regulations for the joint development, organization and operation of the aeronautical services of the army and the navy, instead of by the separate development of each service within delimited exact areas of responsibility.

"2. While the operations of the aeronautical service of the navy will be principally over the water, and those of the army principally over the land, it may be said that a war with a first-class power will find the two services constantly operating together. The coast line and the water areas adjacent thereto will become a theater of joint operations in which the naval aeronautical service will take precedence prior to the accomplishment of an invasion, and subsequently the army aeronautical service will take precedence if the hostile landing be accomplished, but in either case each service will be supplemented and supported by the other.

"3. For the above reasons the board believes that pilots and observers for both services should be trained together, so that each service may effectively supplement the other in time of need; that joint training stations should be located on or near the coast; and that in the selection of sites for the establishment of the permanent coast stations, careful consideration should be given to their suitability for joint occupancy.

"4. While there is an ample field for each service to proceed along its own line in the development of the type of aircraft best suited to meet its particular needs, the board believes that the types adopted by the army and navy should be as nearly alike as may be consistent with the particular service required of each; that the motive machinery and control should be standardized; and that in this development there should be had the mutual interchange of ideas and joint co-operation that now obtain in the design and construction of the first Zeppelin. The board believes, also, that if either service should establish a plant for the construction of aeronautical machines or accessories, the other service should be privileged to use it under such control as may be deemed necessary by the service constructing the plant.

"5. It is believed to be neither practicable nor desirable to specify the exact line at which the operations of either service should begin or end, although such a line, if drawn, would coincide approximately with the coast lines of continental United States and of each of the oversea possessions; the army operating over the land, the navy over the sea, but each extending its operations locally into the other's area as occasion requires. Keeping in mind, however, that the two services will be called upon in many cases to act conjointly, their respective responsibilities and spheres of action may be defended in general as follows:

"*Army Responsibility.*—(a) Aircraft operating in conjunction with mobile army. (b) Aircraft required for fire control for coast defences. (c) Aircraft required for the defence of fortifications, navy yards, arsenals, cities, shipbuilding plants, powder works or other similar important utilities, whether public or private, that are located on shore.

"*Navy Responsibility.*—(a) Aircraft operating in conjunction with the fleet. (b) Aircraft operating from shore bases for oversea scouting. (c) Aircraft operating under the commandants of naval districts and advanced bases.

"6. In general it may be said that it is primarily the duty of the army to defend harbors, cities, and all manufacturing or other utilities that are located on shore, and that it should be charged with the organization of the aircraft service for this purpose; and that the operations of the naval aeronautical service will be principally over the sea, although it will require bases on shore, probably under the commandants of naval districts. It should be the duty, however, of the army and naval commandants in coastal districts to familiarize themselves with the plans of each other, with a view to effective co-operation, both on land and on sea."—*Army and Navy Register.*

AVIATION SITES.—A joint army-navy board is studying the Atlantic and Gulf coasts preparatory to the establishment of eight aeronautic stations, which, besides having two dirigibles and six or eight seaplanes each for aerial patrol work, probably will serve as bases for the new 110-foot coast scout boats, of which the navy will order more than 100 in a few days.

Brigadier General George O. Squier is the head of the board.

Sixteen dirigibles and a sufficient number of seaplanes already have been contracted for, and officers and men for the air service are being selected, to be sent to the station at Pensacola, Fla., for training.

The eight stations will be distributed along the coasts to cover strategic areas to be determined by the board. Each will require six officers and 40 men.

The only site already definitely selected is that at Coco Solo, near Colon, Canal Zone, for which an appropriation of $1,000,000 to establish a joint aviation and submarine base was asked of the last Congress. The project is expected to go through at the coming special session.

Funds for the other stations will also be asked at that time, but the department has emergency appropriations sufficient to begin the work at once. The dirigibles are to be delivered within four months.

At present no stations for the Pacific coast are being prepared, although the chain of coast patrol bases will be extended along the entire coast line as rapidly as machines can be obtained and men trained.

The immediate plans require the training within the next four months of 50 officers and 350 men at Pensacola in handling dirigibles. Crews for the seaplanes are already under training, but their number will have to be increased largely without delay.—*Aviation,* 4/1.

James P. Knapp, president of the American Lithographic Company, has presented to the navy through Rear Admiral Nathaniel R. Usher, commanding the third naval district, an airplane station to be equipped with three hangars and a wireless station on his property at Mastic, on the south shore of Long Island. The station was found to be ideally situated strategically, being halfway between New York City and Montauk Point, which would allow aviators from the station to patrol the whole third district.—*N. Y. Times,* 4/15.

NAVY DIRIGIBLES.—By permission of the Secretary of the Navy the following description of the Blimp dirigible balloons, which the B. F. Goodrich Company is building as rapidly as possible for the government so that they may be available for war scout work, is made public:

"The shape of the envelope of the Blimp dirigible somewhat resembles that of a cigar. The entire length, from tip to tip, will be 160 feet and the maximum diameter 31.5 feet, but the maximum width over the tail fins will be 36.2 feet. This huge envelope will displace 77,000 cubic feet.

"Suspended from the envelope will be a rigidly built car, spacious enough to carry a pilot, an observer, the necessary accessories for determining altitude, speed, etc., and a 100-horsepower gasoline motor of the latest improved type. Provision is also made for carrying ballast, which, when thrown out, will enable the dirigible to reach an altitude of 7500 feet with safety.

"These dirigibles are to be so constructed that the maximum speed of 45 miles per hour is attainable at an altitude of 600 feet, and this speed may be maintained for 10 hours. They can also endure 16 hours of flying at the cruising speed of 35 miles per hour, which permits a range of 560 miles.

"Including the weight of the pilot and observer and their equipment, the estimated weight of the dirigible is 5275 pounds. The total weight of ballast is only 601 pounds, 390 being water and 211 pounds of sand. This total weight of 5275 pounds is divided by the government engineers into two classes, known as 'penalty weight' and 'useful load.' The first mentioned covers only the dirigible and its mechanical equipment, which is specified at 3334 pounds. The 'useful load' includes the pilot and observer, their instruments, radio, fuel, oil and water, together with the sand and water ballast and the maximum weight of this is set at 1941 pounds.

"Some idea of the development of power plants for dirigibles is gained from the fact that only 568 pounds is allowed for the combined weight of the engine, mufflers, radiator, water, propeller and hub. In the early stages of gasoline engine manufacture the old single-cylinder motor alone nearly approached this weight.

"The car used in these dirigibles will greatly resemble that of the ordinary aeroplane, except that it is so constructed that for strategic or other reasons the pilot may light upon a body of water. This is made possible by attaching skids of ash, to which are securely fastened large waterproof cylinders of fabric stuffed with kapok fiber, which afford the requisite buoyancy. Ample room is provided in the car for the pilot and observer, as well as the compact power plant, and both compartments are well protected from the weather. The weight of the car less its equipment will be 436 pounds."

These dirigibles, for which the Goodrich Company is under contract with the government, will be built complete in its Akron factories, so that when they reach their destination they will be ready for immediate trial flights.—*N. Y. Times,* 4/1.

MERCHANT MARINE

PIERS FOR STATEN ISLAND.—It is announced that work has been begun on the construction of three large piers at Staten Island, New York. The piers will be more than 1000 feet in length and capable of accommodating at the same time 10 ocean freighters with a combined capacity of 100,000 tons.

MODERN SHIPS FOR COMMERCE.—Major General George W. Goethals, builder of the Panama Canal, was requested formally by President Wilson to-day to take charge of the building of 1000 wooden ships for foreign commerce.

The greatest importance is attached to the scheme of the Shipping Board for building wooden ships which has been approved by the President and the Council of National Defence. The entire resources of available shipbuilding yards are to be used.

The President earnestly hopes that General Goethals will undertake the work, and if he does, he will be placed in general charge with unlimited authority to organize the building facilities.

The Shipbuilding Board has $50,000,000 at its disposal for the construction and purchase of vessels, and it is estimated that beginning early in the fall ships at the rate of 200,000 tons a month can be turned out.

In 1916 the United States had 500,000 tons of shipping in the transatlantic trade. During a meeting of railroad executives the question was taken up of making arrangements so that ships now on the great lakes and in the coastwise trade can be utilized for ocean going commerce. Under such a scheme, to be put into effect only as rapidly as the railroads can provide facilities to take the place of the lakes and coastwise shipping, it is estimated that the present transatlantic tonnage of the United States can be doubled, and possibly trebled.

Officials have impressed on the railroad executives the danger of the submarine menace, and have laid stress on the fact that by greatly increasing the transatlantic shipping tonnage the work of submarines can be counterbalanced.

The use of German merchant ships now in American harbors will add approximately 600,000 tons to the supply of the United States. Estimates are being made on the cost of repairing the damaged machinery of the vessels.—*N. Y. Herald,* 4/12.

It has been announced that the construction of seven steamers of a total gross tonnage of 19,000, has been contracted for by the Toledo Shipbuilding Co., of Toledo, Ohio. All are full canal-size steamers of the Norwegian type and are to be used in coastwise trade. The contracts call for a speed of 10 knots.

NEWPORT NEWS SHIPBUILDING COMPANY.—That the plant of the Newport News Shipbuilding and Dry Dock Co. will not change ownership, but will be continued under the present management, is the statement authorized by the president, Homer L. Ferguson. Mr. Ferguson says that the options held on the plant have not been exercised and that the yard has now been taken off the market and will not be disposed of.—*Shipping Illustrated,* 4/7.

CHESTER SHIPBUILDING COMPANY.—Negotiations have been completed for the sale of the Chester Shipbuilding Company to a British syndicate, according to reports in circulation in Chester, Pa. The purchase price is understood to be $3,000,000, estimated as a profit of 200 per cent on the original investment. The plans of the new owners are said to include the enlargement of the yard and the construction on an extensive scale of steamers for the transatlantic trade. The name of Andrew Weir, of London, has been mentioned in connection with the transaction, but no confirmation of the reports can be obtained from any of the parties interested. The Chester Shipbuilding Company was organized about a year ago to take over the old Roach plant at Chester.—*Shipping Illustrated,* 3/31.

NEW COMPANIES.—During March this year the following shipping companies were formed: The Franco-American Steamship Company, with $5,000,000 authorized capital; the France and Canada Steamship Company, with $4,000,000 capital; the Lone Star Ship Building Company, $2,000,000, and the National Seamless Boat Company, $1,000,000.—*Marine Journal,* 4/7.

BOMBS FOUND IN COAL.—A report from Buenos Ayres says that on the voyage from New York to Rio Janeiro a bomb was found in the coal of the Lamport and Holt liner *Tennyson.* According to the newspapers, eight bombs were discovered in the coal cargo of the Norwegian ship *Alderny,* during her trip from New York.—*Shipping Illustrated,* 4/7.

GERMANS CONVICTED OF DAMAGING MERCHANTMEN.—Captain Charles von Kleist and five other Germans employed as engineers on board the North German Lloyd steamship *Friedrich der Grosse,* were found guilty by a federal jury April 2 of conspiracy to destroy merchant ships sailing from American ports by means of fire bombs. The men had been on trial for two weeks. Although they stoutly maintained that they knew nothing of the alleged plot, the jury took but 50 minutes to find all six of them guilty. The convicted men, besides Von Kleist, are Karl Schmidt, chief engineer of the *Friedrich der Grosse,* and Ernst Becker, Frederick Kerbade, George Praedel and Wilhelm Parades, assistant engineers on board the vessel. The defence asserted that the men did not know what they were doing when they manufactured and handled shells for Dr. Walther Scheele, alleged to be the chief conspirator, and that even if they did know their offence was political rather than criminal. Judge Van Fleet interrupted to say that such an argument was without merit.—*Shipping Illustrated,* 4/7.

LESSONS OF THE WAR

ATTEMPTS TO THWART OUR NAVAL POLICY.—It is probable that enemy submarines will make sporadic attacks upon our men-of-war and merchantmen off the Atlantic coast of the United States primarily for the purpose of so frightening the American public that demands will be made from all sections of the coast for the presence of additional men-of-war at times when naval strategy will require their presence elsewhere. But it is to be hoped that our people will be ready when the time comes to make the necessary sacrifices, and that they will not make selfish appeals that will impede the operations deemed essential to bring the war to a speedy and successful termination.

ZIG-ZAG COURSE TO AVOID SUBMARINES.—An interesting address by Commodore Lionel Halsey at the twenty-fourth annual meeting of the Imperial Merchant Service Guild was chiefly interesting for an analysis given by the Fourth Sea Lord of attacks by torpedo on merchant ships without warning. Out of 32 attacks, he said, 27 were successful, 22 of the ships being sunk and five damaged and beached. Of the five unsuccessful attacks, in two the torpedo missed ahead, in one it missed astern, and in two the periscope was sighted and the torpedo avoided. The important point to note is that, according to Commodore Halsey, out of the 27 attacks, in 21 cases the ships were not zig-zagging. There could be no stronger testimony to the importance of merchant ships within dangerous areas resorting to frequent changes of course and speed as a means of baffling the U-boats. The Fourth Sea Lord expressed the hope that the information he had given would be circulated, so that every captain of a ship leaving the British Isles might be able to see what happened, as it was a very good example of the vital importance of zig-zagging with discretion. It would certainly seem that in many cases the adoption of such tactics is as valuable as the possession of a gun.—*The Army and Navy Gazette,* 3/17.

ANTI-SUBMARINE DEPARTMENTS.—Sir Edward Carson's announcement on February 21 that the Admiralty had established an Anti-Submarine Department has been followed by moves in this direction both in Italy and France. On March 6 an official decree was published in Rome "unifying the various services concerned with the defence of sea traffic against submarines and placing them under the direction of an admiral." The function of the new department, it was stated, will include the effective arming of merchant ships, and the award of money prizes to those who sink or disable an enemy submarine. In the course of a speech in the Chamber last Saturday, Admiral Corsi, describing the measures Italy was taking, said:

"We have armed numerous coast places and have organized a coastguard service and methods of chasing submarines, as well as barriers and other defensive works. The depth of our seas does not permit an extensive use of nets, which have given excellent results elsewhere. About 200 small vessels have been employed in the Otranto Channel for some months. The methods of defence will be still further improved by the employment of numerous aeroplane squadrons and small airships.

"Sixty per cent of Italian mercantile marine is already armed, and soon all our merchant ships will be armed and will have wireless apparatus."—*The Army and Navy Gazette,* 3/17.

The *Scientific American,* commenting on the submarine menace, says:

"In war, perhaps more than in any other contest of strength, it is perilous to underestimate the resources and strength of the enemy. That is one of the truisms which are so true that we are in danger of overlooking them altogether. Thus, in regard to the German submarine campaign, we note that there is a tendency to underestimate its potential danger to the Allies, and therefore, in the event of its success, to ourselves.

"It is generally believed that the submarine-infested areas are so completely covered by the anti-submarine fleets of the Allies, that the strength of the German attack is constantly being weakened by very large losses; but if we analyze the testimony, and apply to it the cold criticism which we would use in any other enterprise; in other words, if we brush aside unauthenticated rumors and confine ourselves entirely to official statements, we shall find that the Allied governments have never made any definite statement whatsoever as to the number of German and Austrian submarines that have been captured or sunk.

"It is only recently that this journal has been able to obtain a conservative estimate, in quarters where reliable statistics are available; and we are informed that a total loss of one hundred would be, if anything, an over-statement of the truth. This figure includes many boats which were supposed to be lost because they were believed to have been heavily hit by shell-fire.

"For some months we have had a growing conviction, based upon a very close study of the campaign, that the submarine losses were not nearly so large as represented and that with the growth in size, speed and sea-keeping qualities of the submarine, the problem of meeting and breaking up the so-called blockade is becoming increasingly difficult.

"It is our belief that at the time of the Jutland fight, when the German High Seas Fleet was driven back, with heavy losses and in a badly battered condition, to its naval bases, Germany, realizing the hopelessness of any attempt to defeat or break through the British fleet, determined to cease all work upon the construction of capital ships and bend its whole ship-and-engine building capacity to the creation of a great fleet of submarines for war upon enemy and neutral commerce. Saving and except that this was an utterly illegal form of warfare, the Germans were perfectly right in stating that herein lay their 'last chance of victory.' For it is a fact that, granted a sufficiently large fleet of submarines, the Allies can be, if not starved, at least so hampered by a shortage of food and raw materials for the manufacture of guns, shells and military equipment, that they will be unable to win such an absolute victory as to enable them to dictate the terms of peace. This is the situation as Germany sees it to-day. She has stated that it is her purpose to force the Allies to a compromise peace, and whether she can do it or not depends first and last upon her ability to set afloat and man, within a definite period of time, the thousand or more submarines which would enable her thus to bring the Allies to their knees.

"What is the German submarine-building capacity? Is it sufficient to enable her, say within a year, to build, equip and man a thousand or twelve hundred boats? Nobody outside of Germany can answer that question; but the *Scientific American* believes that she is probably well able to do this, provided, of course, that she is not herself brought to her knees through collapse of her finances, through starvation, or by the absolute overthrow of her armies.

"Of course, the only plan by which Germany could build a thousand submarines in a year, would be by what has come to be known as the manufacturing method, of which a notable example is found in the great Ford plant at Detroit. It is pretty safe to say that she has adopted a standard type of craft, the details of which are based upon the experience of the past two and a half years, and that she has enlisted the whole of her shipbuilding plants, public and private, and a corresponding number of her engine-building firms, in this work.

"We have made investigation of the capacity of the German yards as regards building ways, and it discloses the interesting fact that, without laying down any additional ways, she could have under construction at any given time about 530 submarines of the size of the *U-53* which came to Newport last year. The 800-ton submarine requires about 30 feet of clear width in order to allow a working space around the hull, and its length is something under 250 feet. Each of the three 625-foot dry-docks at Wilhelmshaven, for instance, would permit of the construction of six submarines on its floor, and eight boats could be constructed in each of the larger docks, 822 feet in length. Also the floating docks, of which the Germans have so many, would form excellent building ways. The smaller dry-docks, 500 feet or less in length, and the floating docks would take two, three or four submarines, as the case might be. Moreover, ways suitable for submarine construction can be built rapidly on foreshore or riverbank, and the actual shipping and dock-yard capacity, so far as building ways is concerned, could quickly be doubled. If the Germans thought fit, they could have a thousand submarines under construction at the same time.

"The limiting factor as to time-capacity, however, would not be the provision of ways, or even the construction of the hulls, but rather the rapid construction of the internal equipment. Of this the engines would present the least difficulty; for Germany is the great Diesel-engine country, and if they extended themselves in a concerted effort of this kind, the leading heavy-oil engine builders, such as Krupps, the Emden Works, the Augsburg Works and the Neuremburg Works, reinforced by less known firms and the large number of engineering plants which could be requisitioned for this work, would be well able to take care of the demand. The principal difficulty would be to supply the special apparatus in the way of periscopes, gyroscopic compasses and the other mechanical details, which must be of the very finest workmanship and require special knowledge and skill. Germany, however, is famous for her optical work, and unless there is a shortage of the materials required, the instrument makers should be able to keep pace with the shipbuilder and the builder of engines.

"As to the time for construction, one large shipbuilding firm in this country has assured us that if its plant were doing nothing else, it could turn out a submarine of the German type in five months' time. Our Naval Construction Corps estimates that it would take seven months. If Germany is concentrating her whole shipbuilding resource upon the task, we believe that six months might be taken as a fair average.

"The Central Powers may have 200 submarines afloat (and we think it is possible that they may have many more than that) and if, as is more than likely, they have some 500 on the ways at the present time, this would mean that in six months they would have 700 U-boats available, and 1200 by next spring.

"But the crews? The German naval personnel numbers over 150,000 men. Her idle battleships can supply all the men required to man the submarines as they are successively set afloat.

"Here, as we see it, is the immediate danger point in this great conflict into which we have now entered. It is here that we should apply, and should at once apply our whole effort. If we refuse to do this, and elect to fight a purely defensive war, and the Allies should have to make a peace favorable to Germany, we may ultimately find ourselves face to face with the High-Seas Fleet of Germany, and the veteran armies, ten millions strong, of the four nations of the Central Powers.—*Scientific American, 4/7.*

A British naval officer writing on the submarine warfare states his views in the *Army and Navy Gazette* as follows:

"It could be wished that the people of this country had by now thoroughly realized the seriousness and danger of the proposition of which the U-boat and mine campaign is the more prominent factor. It will not be for want of warning if they have not so realized it, for, one after the other, Sir John Jellicoe, Sir Edward Carson and Mr. Lloyd George, have in pregnant speeches emphasized the fact. The Prime Minister, dealing with the necessity for economy in food, has stated that our stocks of provisions are alarmingly low. The First Lord of the Admiralty has with praiseworthy candor revealed sufficiently the extent of the submarine and mining menace to show how this is affecting, to our immediate detriment and peril, the carrying tonnage upon which we rely for replenishing and supplementing those stocks. The First Sea Lord also, by his appeal to the men in the shipyards, has pointed out the urgent need for replacing, with the least possible delay, the victims of the German under-water warfare. It behoves everyone, individually and collectively, to respond patriotically and wholeheartedly to the calls thus made by those who are best acquainted with the imminence and magnitude of the danger. The navy will in time meet the threat of the submarine and the mine, but it has not yet done so, as the First Lord said a week ago, and it is possible that before the measures of repression have fructified and become completely successful the losses may be greater than they have been hitherto. Sir Edward Carson let in the light upon the extent of the peril when he described how it had been necessary to sweep up mines laid off the Cape of Good Hope, the Gulf of Aden and Colombo. He illustrated, also, the task which lies before our seamen by pointing out that in the North Sea there are a quarter of a million of square miles, in the Atlantic there are 30 millions, and in the Indian Ocean nearly as many, while in the Pacific there are nearly 70 millions. All these vast areas of water have to be continually scoured for the dangers which may lurk in them, imperilling the lives of the navigators and the property entrusted to their care—not only the seamen of the Allied Powers, but those of neutral powers using the seas upon their lawful occasions. . . .

"The announcement of the loss of the transport *Mendi,* which was made in the Cape Parliament March 9 by the Prime Minister of the Union of South Africa, reveals a mishap which was not due in any way to enemy action, but was the result of those ever-present hazards of the sea which demand their toll from the men who use the waters. The *Mendi* was sunk very early on the morning of February 21, off the Isle of Wight, through colliding with another vessel, and 615 men of the South African Native Labor Contingent, with 10 Europeans, lost their lives. In the whole two and a half years of war this appears to be the first fatal mishap to a British transport from collision. All the seven other British transports, the loss of which has been officially announced, were destroyed by submarine. There was the *Royal Edward,* sunk in the Ægean on August 4, 1915, with the loss of a thousand lives. On September 19 the *Ramazan,* also in the Ægean, was sunk by shell fire from a submarine, and 300 Indian troops were drowned. In the following month came the news of the sinking of a third transport in the Ægean, the *Marquette,* with a loss of 99 lives. Then on November 3, 1915, the *Woodfield* was sunk off the coast of Morocco, but only six men were killed and 14 wounded. During 1916 the only transport losses officially announced were those of the *Franconia,* on October 4, and the *Russian,* on December 14. Both were sunk in the Mediterranean, and both vessels were empty at the time. On January 1, 1917, the *Ivernia* was torpedoed in the Mediterranean, with the loss of 85 from the rank and file on board her. Apart from this total of eight British transports destroyed, three others were attacked by enemy craft, but escaped with some casualties. These were the *Manitou,* which was fired upon by a Turkish torpedo-boat on April 17, 1915; the *Mercian,* shelled by a submarine on November 3, 1915; and the *Southland,* torpedoed on September 2, 1915. Remembering that, as Sir Edward Carson said last month, there had been moved up to October 30 last 8,000,000 men, with 9,420,000 tons of supplies, 1,000,000 sick and wounded, 1,000,000 horses and mules, and 47,504,000 gallons of petrol, the comparatively few untoward incidents connected with the work show conclusively that it was a triumph for organization, discipline and seamanship, of which the Empire may well be proud."—*The Army and Navy Gazette,* 3/17.

David Lloyd George, speaking before the American Luncheon Club in London, April 13, said:

"I am in the position, in the happy position, of being, I think, the first Prime Minister of the crown who, speaking on behalf of the people of this country, could salute the American nation as comrades in arms. I am glad not only because of the stupendous resources which this great nation will bring to the succor of the Allies, but I rejoice as a democrat that the advent of the United States into this war gives the final stamp to the character of the conflict as a struggle against military autocracy throughout the world. That was the note that rang through the great deliverance of President Wilson.

"*Not 'Monarchical Swashbucklers.'*—The United States of America, of a noble tradition, never broken, never have engaged in a war except of liberty. This is the greatest struggle for liberty that they have ever embarked upon. I am not at all surprised, when one recollects the wars of the past, that America took its time to make up its mind about the character of this struggle in Europe. Most of the great wars in the past were waged for dynastic aggrandizement and for conquest. It is no wonder that when this great war started there were some elements of suspicion still lurking in the minds of the people of the United States of America that there were many who thought perhaps that the kings were at their old tricks. I think they somewhat, perhaps, regarded it as in the nature of a conspiracy of monarchical swashbucklers. That the United States of America has made up its mind finally makes it abundantly clear to the world that this is no struggle of that character, but a great fight for human liberty.

"They naturally did not know at first what we had endured in Europe for years from this military caste—it had never reached as far as the United States of America. Prussia is not a democracy. The Kaiser promises that it will be a democracy after the war. I think he is right. But Prussia not merely is not a democracy; Prussia was not a state; Prussia was an army. It had its great institutions, it had its great universities, it had developed its science. All these were subordinate to the one great predominant purpose of an all-conquering army to enslave the world. The army was the spear point of Prussia—the rest was the gilded haft.

"That is what we had to deal with in this old outworn country. It was an army that in recent times had waged three wars, all of conquest, and the incessant tramp of its legions through the streets of Prussia, on the parade ground of Prussia, had gone to the Prussian head. The Kaiser, when he witnessed it on a grand scale at his reviews, got drunk with the sound of it.

"*The Hindenburg Line.*—The most characteristic of all Prussian institutions is the Hindenburg line. What is a Hindenburg line? A Hindenburg line is a line drawn on territories of other people, warning them that the inhabitants of those territories shall not cross it at peril of their lives. That line has been thrown across Europe for 50 years in many lands.

"But Europe, after enduring this for generations, made up its mind at last that the Hindenburg line must be drawn along the legitimate frontiers of Germany.

"This has been an undoubted fight for the emancipation of Europe and the emancipation of the world. It was at first hard for the people of America who tried to appreciate that. Germany never had interfered in a single step with their freedom. But at last they have daily to endure the same experience. Americans were told they were not to be allowed to cross and recross the Atlantic except at their peril. American ships were sunk without warning. American citizens were drowned without apology, as a matter of German right.

"At first Americans could not believe it. They could not think it possible that any sane people could behave in that manner, and they tolerated it once, and they tolerated it twice, until at last it became clear that the Germans really meant it. Then America acted and acted promptly.

"The Hindenburg line was drawn along the shores of America and Americans were told they must not cross it, and America said, 'What is this?' America said, 'The place for that line is not the Atlantic, but on the Rhine, and we mean to roll it up.' And they have started.

"There are two great facts which clinch the argument that this is a struggle for freedom. The first is the fact that America has come in. She would not have come in otherwise. The second is the Russian revolution.

"I have been asking myself the question: Why did Germany deliberately, in the third year of the war, provoke America to this declaration and to this action? Deliberately! Resolutely! The answer has been afforded by General von Hindenburg himself in a very remarkable interview which appeared in the press.

"He depended really upon one of two things, namely, that the submarine campaign could have destroyed international shipping to such an extent that England would have been put out of business before America was ready. According to his computation America could not be ready for 12 months. He does not know America. He is confident in the alternative that when America is ready at the end of 12 months with her army she will have no ships to transport an army to the field of battle. In General von Hindenburg's words, America carries no weight. He means that she has no ships to carry weight. It is not wise always to assume that even the German general staff, as has happened so often, have made calculations that they have no right to make, and therefore it behooves the whole of the Allies, Great Britain and America notably, to see that that reckoning of General von Hindenburg is false reckoning.

"The road to victory, the guarantee of victory, the absolute assurance of victory has to be found in one word—ships—and a second word—ships—and a third word—ships. With that keenness which characterizes your nation I see that they fully realize that, and I see to-day that they have already made arrangements to build ships by the thousand—1000 3000-tonners for the Atlantic.

"I believe that the Germans and their military advisers are already beginning to realize that this is another of their miscalculations, which is going to lead them to disaster and ruin.

"You will pardon me for just emphasizing that we are a slow people—slow and blundering, but we get there. You get there sooner. That is why I am glad to see you in.

"We have been in this business for three years. We have made, as we generally do, every blunder. In consequence we have got through every blunder. Now we are right out on the course. May I respectfully suggest that it is worth a good deal to study our blunders so as to begin where we are now, not where we were three years ago. In war, time is everything, time has a tragic significance. The step which we are taking to-day may lead to a sure victory; taking it to-morrow may avert disaster.

"'*Bad Day for Autocracy.*'—America has helped us even to win the battle of Arras. She has been making guns, making ammunition, supplying us with fuel, supplying us with shell, and she has got all of that organization and has got that wonderful fertile adaptability and resourcefulness of the great people who inhabit that great country.

"It was a bad day for the military autocracy in Prussia when it challenged the great republic of the west.

"We know America and we also know that now she has said it she will do it. She will wage a strong and successful war, and there is something more important—she will insure beneficent peace.

"I am the last man in the world, knowing for three years what our difficulties have been, what our anxieties have been and what our fears have been; I am the last man in the world to say that the succor which is given us from America is not in itself something to rejoice at and to rejoice at greatly. But I also say that I can see more in the knowledge that America is going to win a right to be at the conference table when the terms of peace are discussed. That conference will settle the destiny of nations and the course of human life for God knows how many ages."—*N. Y. Herald,* 4/14.

SEA POWER.—That Germany placed too much reliance upon militarism and failed to appreciate the value of sea power is now apparent to even the lay mind for, as Author Pollen writing in *Land and Water,* March 22, says, "it is sea power that has thwarted the militarism of Germany. It is sea power that has made it possible for her inhabitants to maintain the country's (Great Britain's) strength and supplies for a long war; it is sea power, therefore, that stands out to-day as the chief obstacle to the success of the conspiracy of the Central Powers of 1914."

"Sea power," continues Mr. Pollen, "just because it is sea force, exists and has its being on an element that is outside the nation. The vast universe of the ocean is a neutral world, where all nations meet and consort in equality and peace, where the tradition of mutual help in the exposure to common danger has bred a certain chivalry unknown and strange to land warfare.

"It is curious that navies, whose power of secret movement had made them so often capable of effecting the strategic surprise denied to armies, must nevertheless do their work in peace and war under a surveillance so public as to keep them constantly at the bar of the public opinion of the world. It is this that explains how it is that sea war, from the earliest times, has been strictly subject to law. Long before any usages were agreed upon by civilized nations for the conduct of armies in the field, anyone injured by an armed ship, in peace or war, had, by the common consent of all nations a remedy in the courts of the nation responsible for that ship's action. Thus was formed the traditional association of the two ideas, sea power and justice. Now justice is the first step towards, and is inseparable from, personal and political freedom. And this is why it seems not far fetched to connect a revolt from an autocracy maintained by military power alone, with the association of Russia with such a country as Great Britain, whose world position was derived from her sea power, which stands primarily for freedom, because of its long identity with, and long control by, the principles of justice as enforced by law.

"In the light of these obvious principles it is all the more difficult to understand the effort which is being made in certain quarters in America to advocate the German theory of the 'Freedom of the Seas.'

"This cry, in the mouths of Germans, is but the whine of the trapped criminal. To the Americans, it is part of the tradition of that country's aloofness from the things that concern the rest of the world. It is intelligible enough that America should have had no interest in European quarrels where they seemed merely selfish or dynastic and, to protest against war taking any toll of her harmless commerce in such a case, was an obvious thing to do. But now that America is forced into war through the abuse of sea power, by a nation that pretending the freedom of the sea is its object, is in reality at war against all freedom. I venture to think that the unreality of this shibboleth will become evident, and without argument. For the true freedom of the seas depends upon the reign of justice, and the last three years have shown, that but for sea power, justice must have perished off the earth."

PUBLIC OPINION.—That raids both from the sea and from the air are primarily for the purpose of arousing public apprehension which would demand a change of naval policy is discussed by a British naval officer in *The Army and Navy Gazette* (British), March 24, who says:

> "It is just as well that the nation should recognize the meaning of these pinpricks and that their main object is to effect an alteration of naval or military policy in response to public apprehension. The German project is based on a misunderstanding of the British people. Yet it is useful to recall the fact that when the Midlands were raided from the air there was an outcry for protection and certain appeals for local defence were also made when their towns were shelled by some of the dwellers on the east coast. The manner in which these appeals were received by the authorities may also be recalled to mind. Mr. Churchill refused definitely to make any change, but Mr. Balfour appeared to take a somewhat different view and aroused criticism when he seemed to be inclined to provide some measure of local protection. Since that date there have been no more appeals of the kind, not because the inhabitants of Kent are more courageous than those of East Anglia, but people generally having more knowledge have also a better appreciation of the situation."

CURRENT NAVAL AND PROFESSIONAL PAPERS

UNITED STATES

INFANTRY JOURNAL. **March.**—Field Fortification I. **April.**—The Age for Universal Military Training, by *E. Orton.* Machine-Gun Combat Firing.

SCIENTIFIC AMERICAN. **March 31.**—Twenty Years' Development of the Holland Submarine.

CENTURY MAGAZINE. **April.**—Can We Defend the Panama Canal?, by a *Naval Expert.*

ATLANTIC MONTHLY. **April.**—The United States and the League of Peace, by *H. N. Brailsford.*

REVIEW OF REVIEWS. **April.**—What May Happen in the Pacific, by *H. C. Douglas.* Japan and America, by *Payson J. Treat.*

CURRENT HISTORY (*N. Y. Times*). **April.**—Naval Power in the Present War (Battle of Jutland), by *Lieut. C. C. Gill.* Comparative Strength of Navies To-day (Part II), by *T. G. Frothingham.*

GREAT BRITAIN

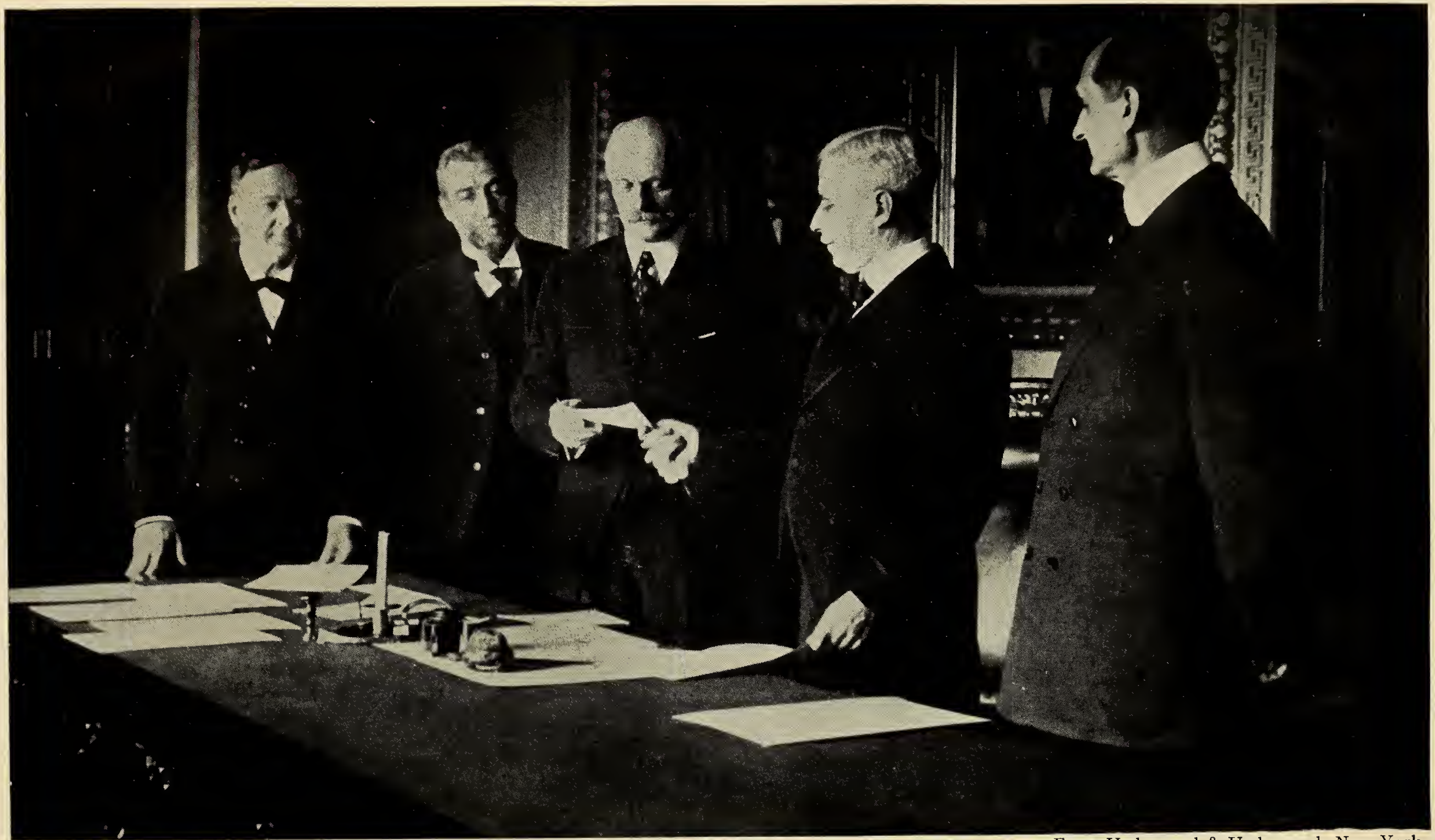
NINETEENTH CENTURY AND AFTER. **March.**—The Organization of the Empire, by *H. Samuel, M.P.* Leagues to Enforce Peace.

CONTEMPORARY REVIEW. **March.**—Wheat Supplies of the United Kingdom, by *Lord Sheffield.* Armed Pacificism, by *Sir John MacDonnell.*

UNITED SERVICE MAGAZINE. **March.**—The Laws and Wages of War, by *H. H. L. Bellot.*

CONTINENTAL EUROPE

RIVISTA MARITTIMA (Italy). **January.**—Naval Programs and Prophecies in the Light of the War. Submarines and the Laws of Maritime Warfare, by *J. A. Rosso.*



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From Underwood & Underwood, New York.

PAYING $25,000,000 FOR THE DANISH WEST INDIES

From left to right: Josephus Daniels, Secretary of the Navy; Rear Admiral James H. Oliver, newly appointed Governor of the Danish West Indies; Mr. Constantin Brun, Danish Minister; Robert Lansing, Secretary of State, and William G. McAdoo, Secretary of the Treasury.

INTERNATIONAL NOTES

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NAVAL WAR NOTES

Prepared by Lieutenant I. C. Kidd, U. S. Navy

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General 1079
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NORTH SEA AND BRITISH CHANNEL

Zeebrugge Submarine Base.—A military expert commenting in the *New York Times* of April 15, says that the British objective is undoubtedly Douai and as this " is the key to French and Belgian territory to the north and is the base which feeds this territory" success at this point would force the Germans east of Zeebrugge to sacrifice the Zeebrugge submarine base.

" U-30 " Interned.—Another German submarine stranded off the Dutch coast and has been interned. She is described as the *U-30*, of about 350 tons, with a crew variously reported as numbering from 14 to 25. The boat went aground on the morning of February 23 between Domburg and Westkapelle, on the island of Walcheren. A Dutch officer boarded her and removed the wireless apparatus, and on Monday it was officially announced from The Hague that the boat had been disarmed and would be interned. She left at 6 p. m., March 25, for Veere, on the east side of Walcheren Island. The crew will probably be confined at Bergen-op-Zoom.—*Army and Navy Gazette*, 3/3.

Submarine Campaign Successful.—The *New York Herald* prints the following:

" In a confidential statement to the Reichstag Main Committee, as reported in a telegram from Berlin, Vice Admiral von Capelle, German Minister of the Navy, said all expectations regarding the submarine war had been realized to the fullest extent.

" The total of tonnage officially reported as having been sunk in February, amounting to 781,500, was destroyed in spite of unfavorable weather and ice floes. There were the best prospects for the future, he asserted, all the more because the number of submarines in active service was increasing constantly and because these craft were always becoming more efficient.

" All the reports in hostile and neutral newspapers regarding the destruction of submarines were false, continued Admiral von Capelle. On the contrary the losses remained at a lower level than had originally been estimated, while the increase in the number of submarines for active service in February and March had exceeded the losses by far.

" According to the reports received to date the month of March promised very well, the Minister stated, although everywhere in the barred zone there had lately been perceptible a decrease in shipping, the submarines having encountered far fewer vessels. This was chiefly to be ascribed to the attitude of neutrals.

"The navy, said Admiral von Capelle as quoted in the telegram, received with pleasure the fact that neutral shipping had avoided the barred zone. The sinking of neutral vessels was a painful task for the German naval forces, but one which was absolutely necessary. The navy, he added, hoped that the urgent warning against navigation of the barred zone would more and more be understood and heeded in neutral shipping circles.

"Germany's enemies, especially, Great Britain, Admiral von Capelle declared, had tried with every means—by compulsion, chicanery and false promises, by concealing their losses and by false statements regarding losses of German submarines—to induce neutrals to continue their imports to Great Britain and to risk their lives for the British. Of the losses he could afford, he said, to let the facts speak for themselves."

AIR RAID ON LONDON.—It has been announced that Zeppelins made a raid on London and the southeastern counties of England during the night of March 16. According to the British official report, no lives were lost and no damage was done. This was the first appearance of Zeppelins over England since November 27, 1916, when two raiding airships were shot down by the British off the north coast.

SEARCHLIGHTS ASSIST ZEPPELIN RAIDERS.—An Associated Press despatch from Amsterdam to the *New York Herald*, dated March 19, says:

"A telegram received from Berlin says it has been learned from an authoritative source that the airships which made a raid in England on the night of March 16 observed 50 to 60 searchlights within the London area. By the aid of the searchlights the airships were bombarded severely, but without effect, with incendiary projectiles.

"British airmen also took part in the attacks, the telegram says, but did not approach close to the airships. The men in the Zeppelin crews could see the hostile aeroplanes distinctly. Although the lights in London were darkened, they were able to observe the city clearly.

"The airships were sought for vainly by searchlights of the Thames defences and British outposts.

"During the journey back a heavy storm arose."

BRITISH DESTROYERS SUNK.—According to an official announcement made in London, German destroyers made a raid on the Kentish coast early in the morning of March 18 causing slight material damage. The Admiralty issued the following statement concerning thereto:

"Enemy destroyers shelled the undefended watering place of Ramsgate on Saturday night. They retired hurriedly before our local forces and escaped in the darkness. It was not possible to ascertain the damage inflicted on them.

"At almost the same time enemy destroyers engaged one of our destroyers on patrol to the eastward of the Straits of Dover, sinking her with a torpedo. She returned the fire, using torpedoes and guns. The result is not known. There were eight survivors from the crew. All the officers were drowned.

"A second British destroyer was torpedoed but not seriously damaged while picking up the survivors from the first. A British merchant vessel in the northern part of the Downs was sunk by a torpedo during Saturday night."

The British Admiralty announced on March 27, 1917, that a British destroyer recently struck a mine in the Channel and sank. Four officers and 17 men were saved. Another destroyer sank March 27 after a collision with a steamer. One man was lost. There were no other casualties.—*Army and Navy Journal,* 3/31.

MOEWE.—The German auxiliary cruiser *Moewe,* which recently returned safely to a German port from a second raiding trip in the Atlantic, sank 26 vessels all told.—*Army and Navy Journal,* 3/31.

SHIP LOSSES.—The British hospital ship *Asturias* was torpedoed March 20, 1917, without warning, it was officially announced on March 27 and 31 persons were killed and 12 are missing. The statement also says that the *Asturias* was steaming with all navigating lights and with all proper distinguishing Red Cross signs visibly illuminated. "The torpedoing of this hospital ship," say the official statement, "is included in the list of achievements by *U*-boats as reported in a German wireless press message March 26."

During the week ending March 25, 2314 ships over 160 tons net arrived at ports in the United Kingdom, according to an official statement issued on March 29. During the same period 2433 vessels of over 160 tons net sailed from ports in the United Kingdom. These figures are exclusive of fishing vessels and local shipping. Eighteen British merchant vessels over 1600 tons gross, including two during the previous fortnight, and the hospital ship *Asturias,* were sunk by mines or submarines. Seven merchant vessels under 1000 tons also were sunk. Thirteen British merchant vessels, including three during the previous fortnight, were unsuccessfully attacked by submarines. Ten British fishing vessels, including nine sailing vessels, were sunk during the same period. Including the above totals, the number of British ships destroyed thus far for this month is 127. Sixty-two, including the *Asturias,* were of a tonnage of over 1600, while 28 were under that figure. Thirty-seven fishing vessels also have been sunk. The Admiralty reports for the first two weeks of March showed that 46 ships were sunk, while the reports of the last two weeks tell of the destruction of 81 vessels.—*Army and Navy Journal,* 3/31.

The Hun submarines had less success during the week ended April 8 than at any time since the ruthless submarine campaign was inaugurated, according to British Admiralty figures issued April 11. Seventeen British merchant vessels of more than 1600 tons were sunk during this period and only two of tonnage less than 1600. This is about 0.40 per cent of all ships entering or clearing from ports in the British Isles, the next lowest percentage being 0.43, five weeks ago, which was far below the percentage of destruction during the first two weeks of this warfare. The marked falling off of submarine destructiveness was among smaller merchant craft. Thirteen of these were sunk during the week ended April 1, as against two this week. The highest number of ships of more than 1600 tons sunk in any week since February 1 was 19 and the lowest number 13. Altogether the loss of ships over 1600 tons has been 97 in the last six weeks and of smaller vessels 43. The percentage of loss was 0.66 for the week ended March 25, 0.52 for the week ended March 18, 0.43 for the week ended March 11 and 0.46 for the week ended March 4. During the first two weeks of the campaign it was 1.04.—*Shipping Illustrated,* 4/14.

GERMAN DESTROYER LOST.—A German destroyer was sunk and another was damaged severely during the night of April 7-8 off the Belgian coast, the Admiralty announces. The statement follows:

"Attacks were carried out on the Zeebrugge (Belgium) mole by naval seaplanes on the night of April 7-8. Many bombs were dropped. Attacks also were made on ammunition dumps at Ghent and Bruges. All our machines returned safely.

"Other operations were carried out off Zeebrugge during the same night, whereby two enemy destroyers were torpedoed. One was seen to sink. The fate of the second is uncertain, but it was severely damaged. We sustained no casualties."—*N. Y. Times,* 4/9.

"RYURICK" DAMAGED.—Germany announces that the Russian cruiser *Ryurick* struck a mine in the Gulf of Finland and was badly damaged.

SHIP LOSSES ACCORDING TO LORD BERESFORD.—Losses of merchant vessels amounting to more than 420,000 tons thus far in March have resulted from war measures of the Central Powers, Lord Charles Beresford said in the House of Lords March 27.

In a debate in the House of Lords on the British blockade Lord Beresford said that with longer days and calmer weather the losses would increase, and that the public ought to have the facts brought home to it. The number of vessels destroyed thus far this month was given by him as 255.

Lord Beresford expressed the opinion that captures of submarines by the British were not at all equivalent to the number of new submarines the Germans were launching. He believed the Germans had more men and more food than had been imagined in England. The Berlin office, he said, had too much power over the navy, to the detriment of the navy. The losses of British, allied and neutral vessels for February, he said, amounted to 281 vessels, with an aggregate tonnage of more than 500,000.

Figures given out in London on March 3 placed the amount of tonnage destroyed by German submarines in February at about 490,000. No mention was made at this time of ships destroyed by mines. The German Admiralty announced on March 16 that the aggregate gross tonnage of merchant ships destroyed through war measures of the Central Powers was 781,500. On the basis of the figures given by Lord Beresford in the House of Lords, and taking into account the lesser number of days in February, the indicated average daily loss of tonnage for this month is about 10 per cent less than in February.—*N. Y. Herald,* 3/28.

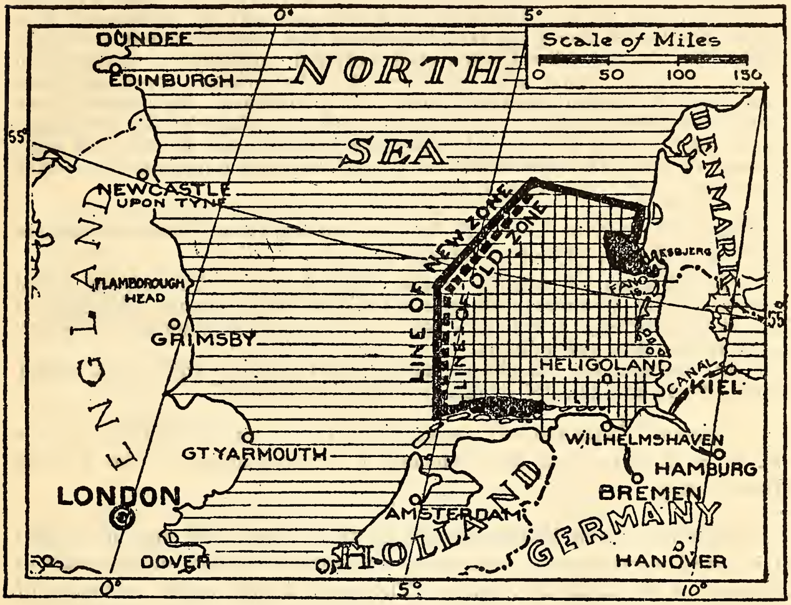
GERMAN RAIDER IN ATLANTIC.—The French barque *Cambronne,* arrived at Rio de Janeiro last week with the crews of 11 ships sunk by a German raider, believed to be the former American ship *Pass of Balmaha,* which was condemned by a German prize court last year. The ship is fitted with auxiliary motor engines and armed with two 105 mm. and 16 machine guns, being manned by a crew of 64 men. The ships sunk by the raider, which is said to be named the *Seeadler,* are: Sailing vessels—*Antonia* (Fr. bq.), 2662; *British Yeoman* (Br. bq.), 1862; *Buenos Ayres* (It. sp.), 1677; *Charles Gounod* (Fr. bq.), 1960; *Dupleix* (Fr. bq.), 1938; *La Rochefoucauld* (Fr. bq.), 1949; *Perce* (Br. schr.), 308; *Pinmore* (Br. bq.), 2286. Steamers—*Gladys Royle* (Br.), 3268; *Horngarth* (Br.), 3609; *Lundy Island* (?), 3095. The *Cambronne* encountered the raider March 7 in latitude 21 S., longitude 7 W., a point in the Atlantic almost on a line with Rio Janeiro, and about two-thirds of the way to the African coast. After the survivors had been put on the *Cambronne* she was ordered to proceed to the coast of Brazil, a voyage of 22 days.—*Shipping Illustrated,* 4/7.

ARCTIC BLOCKADE.—A Reuter dispatch from Christiania says the German Minister has communicated to the Norwegian Government an order from his government that in future the part of the Arctic Sea lying east of 24 degrees east longitude and south of 75 degrees north latitude, except Norwegian territory, is to be regarded dangerous for all navigation.

Ships will be met with all weapons. Neutral vessels entering those waters must do so at their own risk. Neutral ships already on the way to or returning from ports in this zone will not be attacked without warning until April 5.—*N. Y. Times,* 3/24.

DANGER AREA IN NORTH SEA MODIFIED.—It was officially announced on March 23 that the danger zone in the North Sea had been extended.

The black sections off the Danish and Dutch coasts mark safety lanes, provided by the Admiralty decree of February 13, now to be abolished. The only safe areas after April 1 in the waters east and south of the sea limits of the new zone (marked by a solid black line) are the three-mile strip along the coasts of Holland and Denmark. There is still left for neutral shipping a narrow safety lane between the British and German danger areas. This extends from the Dutch coast northward through the North Sea toward Denmark and Norway.—*N. Y. Times*, 3/24.



BRITAIN'S MODIFIED DANGER AREA IN NORTH SEA

MEDITERRANEAN

LOSS OF THE "DANTON."—The destruction of the French battleship *Danton* by a German submarine in the Mediterranean Sea, March 19, 1917, was one of the most important naval losses of the war to the credit of the submarine. Her loss was confirmed by the French Admiralty on March 23. The *Danton*, after being torpedoed, sank in half an hour, the victims numbering 296. The *Escort*, the *Massue* and patrol boats of the French Navy succeeded in saving 806 men. The *Massue* attacked the submarine with grenades and it disappeared and was not seen again, the French report states. The German Admiralty had previously reported the sinking of a battleship of the *Danton* class. The latest official data concerning the *Danton* shows that she was the first of the six (not five as has been reported) vessels of her class to be completed, and this was in March, 1911. She was laid down in 1908, was a vessel of 18,400 tons, and her main battery consisted of four 12-inch, and twelve 9.4-inch guns. Her speed on a

24-hour trial was 18.16 knots, and her best recorded recent speed with 20.66 knots. The *Danton* had an armor belt of 10 inches amidships, extending down to two and a half feet below the water-line. The armor on the ends of the ships was six inches thick. There was an armored deck of three inches, above the main armor belt, as well as a three-inch armored deck, below the main armor belt, and there were lateral armored bulkheads extending from the lower armored decks to the bilge keels. The *Danton* was equipped with Parsons turbine engines of four screws. She had a normal cruising radius of 13,800 miles at 10 knots, and 2000 at full speed. Her water-line length was 475¾ feet, beam 84¾ feet, and maximum draft 27½ feet. The vessels of the *Danton* class were not considered very successful ships. They consumed large quantities of coal at cruising speed, and their machinery has given constant trouble. The ordinary complement of the ships of the *Danton* class was 681, with 751 for the flagship. By the figures made public by the French Admiralty, the *Danton* however had 1102 souls aboard of her. The maximum coal carried was 2100 tons, and the normal, 925 tons.—*Army and Navy Journal,* 3/31.

FRENCH DESTROYER LOST.—A Reuter despatch from Paris published in the *Times Weekly* (London), March 16, says:

"The Ministry of Marine states: The destroyer *Cassini,* on patrol service in the Mediterranean, was torpedoed by an enemy submarine at one in the morning on February 28. The magazine blew up and the vessel sank in less than two minutes.

"The commander, six officers and 100 petty officers and men perished. Two officers and 32 petty officers and men were saved."

"SCORPION" INTERNED.—It was announced in the press, April 16, that the U. S. S. *Scorpion* had been interned at Constantinople by the Turkish Government.

AMERICAN ARMED MERCHANTMAN SUNK.—It has been announced that the armed merchantman *Aztec* was sunk without warning off the coast of France on the night of April 1. The naval guard, under command of Lieutenant W. F. Gresham, U. S. Navy, was rescued. According to the report, the *Aztec* was armed with two 5-inch guns.

GERMAN SUBMARINE OFF ATLANTIC COAST OF UNITED STATES.—During the early morning of April 17 an enemy submarine made an unsuccessful attack on the destroyer *Smith.* The Navy Department made the following announcement:

"Reported from Fire Island lightship to the naval stations at Boston and New York at 3.30 a. m. on the 17th an enemy submarine was sighted by the U. S. S. *Smith,* running apparently submerged. Submarine fired a torpedo at the U. S. S. *Smith,* which missed her by 30 yards. The wake of the torpedo was plainly seen crossing the bow. Submarine disappeared."

PACIFIC

"CORMORAN" BLOWN UP AT GUAM.—The interned German gunboat *Cormoran* at Guam was blown up by its own crew at 8 o'clock Friday night, April 6.

The *Cormoran* refused to surrender to the American forces, which went to take possession of her, and was destroyed. Two German warrant officers and five enlisted men of the crew were killed in the explosion.

Twenty officers, 12 warrant officers, and 321 enlisted men were taken prisoners.

The *Cormoran* was formely a steamer in the Russian volunteer fleet, was captured early in the morning of August 3 by S. M. S. *Emden,* and was formally put in service as a German auxiliary cruiser.—*Army and Navy Register,* 4/14.

GERMAN SUBMARINES IN PACIFIC.—A San Francisco despatch dated April 12 to the *New York Herald,* says:

"Warning that Prussian submarines are believed to be operating in the Pacific was sent to all steamship captains at sea by order of Lieut. Commander E. C. Woods, of the twelfth naval district here. The warning read:

"'Information has this day been received that German submarines are operating in the Pacific. Please notify all ships under your control and ask that they spread the warning broadcast.'

"The locations of the submarines were not made public."

FILIBUSTER SCHOONER CAPTURED.—Four thousand Springfield rifles and 250,000 rounds of ammunition were taken from the filibustering schooner captured by the United States torpedo-boat destroyers *Farragut* and *Hopkins* in the Santa Barbara Channel, according to naval advices made public. The munitions have been shipped to the Mare Island Navy Yard.

Franz Bopp, convicted German Vice Consul at San Francisco, is reported to have purchased the rifles and small arms ammunition several months ago, and to have cached them at an isolated point on the shores of Monterey Bay. They were originally intended to be taken to India on the schooner *Annie Larsen* to equip a revolutionary party then forming in that country.—*N. Y. Herald,* 4/12.

GENERAL

ENTENTE LOSSES.—The British allies have lost since the opening of the war 850,000 tons in warships. This includes a French battleship of the *Danton* class, and is equal to the combined tonnage of Russia and Japan at the beginning of the war.—*Marine Journal,* 4/7.

ZEPPELIN SHOT DOWN.—The *New York Sun* of March 18 published the following:

"A Zeppelin has been shot down in flames near Compiegne. All of its crew were lost.

"The Zeppelin was sighted shortly before dawn and was reached by French anti-aircraft guns at a great height, probably three miles. The airship caught fire and the wreckage, with the burned bodies of the crew, fell outside Compiegne.

"Compiegne is 45 miles northeast of Paris and is close to the battle front, which the Zeppelin had presumably crossed.

"The Zeppelin alarm was sounded at 4.15 this morning (March 17) by firemen, who went through the streets of Paris blowing sirens. All lights were extinguished and airplanes patrolled over the city. At 6 o'clock bugles were blown announcing that the danger was over.

"*Paris Gets Warning.*—When the Zeppelin alarm was sounded, Parisians who looked out of their windows saw in various quarters of the sky the electric searchlights blazing, some near by, some remote, seeking to locate any hostile aircraft that might be approaching. Red signal lights were burned from time to time and the air vibrated with the whir of many propellers as the airplane squadrons, sent up for the city's defence, passed backward and forward over the darkened streets.

"To all appearances the people were more curious to see what was happening than apprehensive.

"The Zeppelin, after being hit by a shell, seemed to hang in the air for two or three minutes, during which time the crew threw overboard their bombs. The missiles fell in a field and many did not explode on coming into contact with the soft earth.

"The Zeppelin took fire, flames jutting out as compartment after compartment of hydrogen gas exploded. Several men jumped from the gondolas before the blazing fabric began to fall. Then the huge mass dropped swiftly, leaving a trail of fire from the burning fragments of the envelope.

"*Thirty Meet Death.*—The wreckage came down across a wall between two villas in Compiegne. Thirty bodies were found in the twisted metal, most of them partly burned. No civilians were hurt.

"The Zeppelin *L-39*, which had come from a flight in the region of Paris, was reached at a height of 3500 meters by ainti-aircraft guns while above Compiegne. The *L-39* fell in flames on a garden wall. Neither the fall of the machine nor the explosion of the bombs caused damage. The airship was completely wrecked."

MOBILIZATION OF THE U. S. NAVY.—It was announced on April 6 that orders for the complete mobilization of the navy had been issued.

MUNITIONS BOARD.—On April 9 the Council of National Defence announced the creation of a General Munitions Board. The following make up the board: Besides Mr. Scott its civilian members are Bernard M. Baruch, Howard E. Coffin, Julius Rosenwald and Dr. Franklin Martin. From the army there are Brig. Gen. Thomas Cruse, Colonel F. G. Hodgson, Colonel H. Fisher, Lieut. Col. J. E. Hoffer, Major P. E. Pierce, Major Charles Wallace and Captain A. B. Barker; from the navy, Rear Admiral H. H. Rousseau, Rear Admiral W. S. Capps, Commander R. H. Leigh, Commander T. A. Kearney, Dr. R. C. Holcomb, Paymaster J. H. Hancock, Lieut. W. B. Lemly and L. McHowe.

NO AMERICAN TROOPS TO EUROPE FOR PRESENT.—No units of the American Army, National Guard or other military forces will be sent to the battle front in Europe for use in the war against the German Government, according to present plans of the administration, until a total of approximately 1,000,000 men have been placed in training. The war plan, as it now stands, follows:

"First. To utilize the navy in every possible way in joint operations with the British and French navies against the German sea forces and their submarine operations.

"Second. To munition the Entente Allies to the fullest possible extent without interference with the manufacture of American munitions.

"Third. To make an immediate loan of $3,000,000,000 to the Allies.

"Fourth. To do everything possible toward providing England with foodstuffs to offset the operations of the *U*-boat campaign.

"Fifth. To train a million men the first year, and another million men the next year, none of which is to be sent to the battle front in Europe until the first million is ready and plans are completed for keeping this force supplied in the field.

"Sixth. To utilize this force of a million men, if necessary, to turn the tide against the Germans in the great war."—*N. Y. Times*, 4/11.

DEFENSIVE ARMAMENT.—It is announced that our State Department's view of defensive armament is that the mere appearance of a German submarine or its periscope near an American armed vessel would entitle the vessel to take all measures of protection on the presumption that the *U*-boat's purpose was hostile. This was based on Germany's announcement that her submarines would attack without warning any belligerent or neutral merchantman encountered within the barred zone.

GERMAN AND AUSTRIAN MERCHANTMEN SEIZED.—The following German and Austrian ships have been seized by the United States:

GERMAN

At New York	Gross Tons
Vaterland	54,282
George Washington	25,570
Kaiser Wilhelm II	19,361
President Lincoln	18,161
President Grant	18,072
Pennsylvania	13,333
Grosser Kurfurst	13,102
Barbarossa	10,984
Prinzess Irene	10,893
Friedrich Der Grosse	10,771
Hamburg	10,531
Koenig Wilhelm II	9,410
Bohemia	8,414
Armenia	5,464
Adamstrum	5,000
Pisa	4,967
Prinz Joachim	4,760
Prinz Eitel Friedrich (not auxiliary of same name now at Philadelphia)	4,650
Allemania	4,630
Magdeburg	4,497
Harburg	4,472
Nassovia	3,902
Portonia	2,778
Maia	2,555
Clara Mennig	1,685
Indra (sailing)	1,746
Matador (sailing)	1,468
At Boston	
Amerika	22,622
Kronprinzessin Cecile	19,503
Cincinnati	16,339
Koln	7,409
Wittekind	5,640
Ockenfels	5,621
At New London	
Willehad	4,781
At Baltimore	
Bulgaria	11,440
Rhein	10,058
Neckar	9,835
At Philadelphia	
Rahetia	6,600
Prinz Oskar	6,026
At Newport News	
Arcadia	5,454

At Wilmington, N. C.	Gross Tons
Kiel	4,494
Nicaria	3,974
At Savannah	
Hohenfelde	2,974
At Charleston	
Liebenfels	4,525
At Pensacola	
Rudolph Blumberg	1,769
Vogesen	3,916
At Jacksonville	
Frieda Leonhardt	2,822
At New Orleans	
Breslau	7,524
Andromeda	2,554
At San Francisco	
Serapis	4,756
Neptun	197
Ottawa (sailing)	3,659
At Portland, Ore.	
Dalbeck	2,723
At Seattle	
Saxonia	4,424
At Winslow, Wash.	
Steinbeck	2,164
At Astoria, Ore.	
Arnoldus Vinnen	1,859
Kurt	3,109
At Honolulu	
Pommern	6,557
Prinz Waldemar	3,227
Setos	4,730
Holsatia	5,649
Locksun	1,657
Loong Moon	1,971
Staatsskeretar Kraetke	2,009
Governeur Jaeschke	1,738

At Hilo, Hawaii

	Gross Tons
C. J. D. Ahlers	7,490

At San Juan, P. R.

Odenwald	3,537

At Pago Pago, Samoa

Elsas	6,591

At Manila

	Gross Tons
Andalusia	5,433
Buchum	6,161
Camilla Rickmers	5,130
Carl Diederichsen	1,246
Clara Jebsen	1,735
Coblenz	3,130
Elmshorn	4,594
Esslingen	4,902
Johanne	1,531
Lyeemoon	1,925
Mark	6,579
Pong Tong	1,631
Rajah	2,028
Sachsen	8,077
Sambia	4,765
Suevia	3,780
Tubingen	5,586

At Zamboanga, P. I.

Borneo	2,168
Marudu	1,514
Darvel	1,308

At Cebu, P. I.

Prinzess Alice	10,981
Tsintau	1,685
Wiegand	499

AUSTRIAN

At New York

Martha Washington...8,312 tons, owned by the Austrian Union (Austro-Americana).
Dora ....7,037 tons, owned by the Austrian Union (Austro-Americana).
Ida ....4,730 tons, owned by the Austrian Union (Austro-Americana).
Himalaia ....4,948 tons, owned by D. Tripcovich.

At Boston

Erny ....6,515 tons, owned by the Austrian Union (Austro-Americana).

At Philadelphia

Franconia.............4,637 tons, owned by D. Tripcovich.

At Norfolk

Budapest ....3,651 tons, owned by the Atlantica Co.

At Tampa

Borneo ....3,621 tons, owned by the Orient Co.

At Pensacola

Lucia ....6,744 tons, owned by the Austrian Union (Austro-Americana).

At New Orleans

Clara ....3,932 tons, owned by the Austrian Union (Austro-Americana).
Teresa ....3,769 tons, owned by the Austrian Union (Austro-Americana).
Anna ....1,575 tons, owned by the Austrian Union (Austro-Americana).

At Galveston

Campania	3,551 tons, owned by D. Tripcovich.
Morawitz.............	4,795 tons, owned by Atlantica Co.

ORDERS TO BRITISH MERCHANTMEN.—In the German White Book on armed merchantmen, containing alleged facsimiles of orders of the British Admiralty to British armed merchantment, the following, governing "action" is cited:

The master is responsible for handling the ship and for opening and ceasing fire. He has been furnished with instructions which will enable him to do this to the best advantage. The duty of the gun's crew is to fight the gun under the general direction of the master, who will communicate to them so much of the instructions as he may consider necessary to enable them to fight the gun to the best advantage.

In action the following instructions should be carried out:

1. When in submarine waters everything should be in a state of readiness, but the gun should not be kept actually loaded.
2. When the enemy is engaged: (a) The point of aim should be the center of the water-line; (b) it is to be remembered that "over" shots are useless. A short shot by causing a splash confuses the enemy. It may ricochet into the enemy. If the shell bursts on striking the water—as it usually does—some fragments are likely to hit the enemy. To get the best result, at least half of the shots should fire short.
3. The master will probably keep the submarine astern, so that little deflection will be necessary.
4. It is not advisable to open fire at a greater range than 800 yards, unless the enemy has already opened fire, for the following reasons: (a) The ammunition supply is limited; (b) accurate shooting under probable existing conditions cannot be expected at greater ranges.

Among the "general" instructions for the guidance in the use, care, and maintenance of armament in defensively armed merchant ships flying the British flag the British Admiralty required of gun crews:

"They are to obey the orders of the master and of officers of the ship. If they think it necessary to make a complaint against any order, they are to obey the order and make their complaint in writing, asking that it may be forwarded to the proper authorities."—*N. Y. Times*, 4/11.

ADMIRAL JELLICOE ASKS FOR MORE SMALL CRAFT.—In an interview granted to the Associated Press, April 12, Admiral Jellicoe said:

"I have no desire to minimize to the American people the serious situation prevailing as a result of the illegal use of submarines by the Germans. Neither is it easy for us to take them into our confidence and tell them what we are doing to cope with the evil, without providing the Germans with useful information. No methods existed in the past for fighting the submerged submarine, and the new inventions and processes for that purpose take time to develop. We are giving your navy all the information in our possession, and, knowing its record, we have great confidence that American inventive genius will supplement it with valuable contributions.

"As far as the feeding of the Allied populations is concerned, our efforts must be concentrated on saving tonnage, while bringing in the necessary supplies, in order to minimize the effect of the submarine warfare. As you probably know, we have bought large quantities of wheat in Australia, but as the round voyage takes four times as long as that to America the bringing of this wheat takes four times as much tonnage as the carrying of American wheat to the Allied Powers. We therefore require all the wheat we can obtain from America and Canada.

"Our food situation is by no means as desperate as the Germans want to believe it is, but, on the other hand, it is more serious than many of our own people realize. Our own shipping suffered very little more in March than during the first month of unrestricted submarine warfare, and other tonnage sunk during that period were in much the same position, and there is no very marked method of combatting the evil. What has been accomplished is the result of inventions and processes which take time to develop, and the government is well aware of the fact that immediate results could not be expected.

"The increasing armament of our mercantile marine has made submarines far more cautious, and more submerged attacks are taking place. Of course, this has one advantage, inasmuch as the raiders must depend upon their torpedoes for such attacks, and, being unable to carry only a limited number, must return to port sooner than when they made their attacks from the surface. Your Navy Department knows just how many submarines we have sunk, but the exact number of *U*-boats which have actually never returned to port is known only to the German Admiralty, which, naturally, does not give us this information.

"Against a submerged attack a host of small craft forms the best protection. We can use everything from destroyers to tugs of any size. The danger of showing a periscope when the submarine may have a bomb dropped on it, or be rammed, is one which our enemy does not like to face. But these craft must be used in the zone where submarines operate, and such a zone is hardly likely to be extended to the American coast. German submarines cannot operate over there effectively without a base, and I am sure that your magnificent navy will have no trouble in patrolling the Mexican Gulf coast, on which a base might exist, while the entrance of Cuba into the war on the side of the Allies deprives the Germans of the best place they might have secured for such bases.

"I have already warned your Navy Department that submarine mine layers may visit your coast, dump their cargo and return, but the damage they do will not prove extensive, as each boat only carries about 30 mines. These mine layers have dropped their mines everywhere about our coast, and if I had the exact figures at hand of the number we have swept up and destroyed you would be astonished.

"It cannot be denied that naval strategy has undergone a vast change as the result of the illegal use by Germany of submarines. Of course, it is also undeniable that their use legitimately has changed naval warfare, but the legitimate change is not so great nor so difficult to cope with as the illegal use of submarines. Their advent as a fighting weapon has made a blockade of an enemy's coast impossible and had added to the difficulties we face on account of the natural features of the German coast line for either attack or defence.

"Against naval Germany the British Isles are tipped the wrong way. One of the disadvantages under which we suffered during the early part of the war was that we had no harbor in the North Sea big enough to hold the growing grand fleet where it could be within easy striking distance of the enemy. One of the most striking results of the legitimate use of submarines has been to compel heavy ships, in order to obtain protection from their attacks, to be accompanied by destroyers when they put to sea, and this fact reduces the radius of action of a fleet on account of the limited fuel capacity of the destroyers.

"The most striking feature of the change in our historic naval policy resulting from the illegal use of submarines and from the fact that the enemy surface ships have been driven from the sea is that we have been compelled to abandon a definite offensive policy for one which may be called an offensive defensive, since our only active enemy is the submarine engaged in piracy and murder.

"We must give our mercantile fleet a measure of protection which would not be dreamed of if the Germans merely used their *U*-boats for legitimate naval warfare, and so many of our smaller warships must be used for this purpose, that the 'tip and run' raid becomes a possibility, while our own blockade efforts suffer. This again brings us back to the importance of small craft for the protection of the mercantile marine. But they cannot end the submarine menace by merely keeping the *U*-boats beneath the water. We want to end the veil by destroying the boats, and we mean to do it. The solution of this problem offers plenty of scope for the inventive genius of both navies.

"Zeebrugge forms another of our problems. It is difficult to deal with now, owing to German occupation and fortification of the Belgian coast. No naval officer, even before this war, ever believed that it was the business of a capital ship to stand up against a land fort, as land guns always have greater facilities for finding the range than a gun mounted in a ship.

"But the fortified Belgian coast is a fact which we have to face, and the destroyers maintained there have made our work of guarding the Straits of Dover more difficult. The Germans in their 'tip and run' raids, during which they have committed additional illegality and the inhumanity of bombarding open towns, have the great advantage of choosing the time of attack, and when as many as 30 destroyers can attack a patrol line you may gain some idea of the number of vessels we need on guard constantly to stop every raid. We have met them more than once at night, but it is difficult to insure that the meeting shall not find us in considerable inferiority, owing to the dispersion necessary to a watching force.

"In conclusion I cannot do better than quote from your great author, Captain Mahan, in his volume, 'The Interest of American Sea Power, Present and Future.' He wrote:

"'To Great Britain and the United States, if they rightly estimate the part they may play in the great drama of human progress, is intrusted a maritime interest in the broadest sense of the word, which demands as one of the conditions of its exercise and its safety the organization of a force adequate to control the general course of events, to maintain, if the necessity arise, not arbitrarily, but as those in whom interest and power alike justify the claim to do so, the laws that shall regulate maritime warfare.'

"And again: 'War, once declared, must be waged offensively, aggressively. The enemy must not be fended off, but smitten down. You may then spare him every exaction, relinquish every gain, but till down he must be struck incessantly and remorselessly.'"

THE SECRETARY OF THE NAVY'S RESPONSE TO ADMIRAL JELLICOE.—The *New York Herald*, April 18, states that the following response to Admiral Jellicoe's statement was given to the *Herald* by our Navy Department:

"Only the capacity of our ship yards will limit the building of tonnage, naval and merchant, that we will undertake to make this nation's power effective against submarines."

INDEX OF WAR VESSEL LOSSES MENTIONED IN THIS NUMBER

NOTE.—A complete table of losses since the beginning of the war is published quarterly; the latest appears in the April number of the PROCEEDINGS.

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DIPLOMATIC NOTES

FROM MARCH 18 TO APRIL 18

UNITED STATES AND GERMANY AT WAR

PRESIDENT'S ADDRESS TO CONGRESS.—On April 2 President Wilson delivered the following address to Congress, convened in extra session on that day:

"*Gentlemen of the Congress:*

"I have called the Congress into extraordinary session because there are serious, very serious, choices of policy to be made, and made immediately, which it was neither right nor constitutionally permissible that I should assume the responsibility of making.

"On the 3d of February last I officially laid before you the extraordinary announcement of the Imperial German Government that on and after the first day of February it was its purpose to put aside all restraints of law or of humanity and use its submarines to sink every vessel that sought to approach either the ports of Great Britain and Ireland or the western coasts of Europe or any of the ports controlled by the enemies of Germany within the Mediterranean. That had seemed to be the object of the German submarine warfare earlier in the war, but since April of last year the Imperial Government had somewhat restrained the commanders of its undersea craft, in conformity with its promise, then given to us, that passenger boats should not be sunk and that due warning would be given to all other vessels which its submarines might seek to destroy, when no resistance was offered or escape attempted, and care taken that their crews were given at least a fair chance to save their lives in their open boats. The precautions taken were meager and haphazard enough, as was proved in distressing instance after instance in the progress of the cruel and unmanly business, but a certain degree of restraint was observed.

"The new policy has swept every restriction aside. Vessels of every kind, whatever their flag, their character, their cargo, their destination, their errand, have been ruthlessly sent to the bottom without warning and without thought of help or mercy for those on board, the vessels of friendly neutrals along with those of belligerents. Even hospital ships and ships carrying relief to the sorely bereaved and stricken people of Belgium, though the latter were provided with safe conduct through the proscribed areas by the German Government itself and were distinguished by unmistakable marks of identity, have been sunk with the same reckless lack of compassion or of principle.

"I was for a little while unable to believe that such things would in fact be done by any government that had hitherto subscribed to humane practices of civilized nations. International law had its origin in the attempt to set up some law which would be respected and observed upon the seas, where no nation has right of dominion and where lay the free highways of the world. By painful stage after stage has that law been built up, with meager enough results, indeed, after all was accomplished that could be accomplished, but always with a clear view, at least, of what the heart and conscience of mankind demanded.

"*This minimum of right the German Government has swept aside, under the plea of retaliation and necessity and because it had no weapons which it could use at sea except these, which it is impossible to employ, as it is employing them, without throwing to the wind all scruples of humanity or of respect for the understandings that were supposed to underlie the intercourse of the world.*

"I am not now thinking of the loss of property involved, immense and serious as that is, but only of the wanton and wholesale destruction of the lives of noncombatants, men, women, and children, engaged in pursuits which have always, even in the darkest periods of modern history, been deemed innocent and legitimate. Property can be paid for; the lives of peaceful and innocent people cannot be. The present German submarine warfare against commerce is a warfare against mankind.

"It is a war against all nations. American ships have been sunk, American lives taken, in ways which it has stirred us very deeply to learn of, but the ships and people of other neutral and friendly nations have been sunk and overwhelmed in the waters in the same way. There has been no discrimination.

"Challenge is to all mankind. Each nation must decide for itself how it will meet it. The choice we make for ourselves must be made with a moderation of counsel and a temperateness of judgment befitting our character and our motives as a nation. We must put excited feeling away. Our motive will not be revenge or the victorious assertion of the physical might of the nation, but only the vindication of right, of human right, of which we are only a single champion.

"When I addressed the Congress on the 26th of February last I thought that it would suffice to assert our neutral rights with arms, our right to use the seas against unlawful interference, our right to keep our people safe against unlawful violence. But armed neutrality, it now appears, is impracticable. Because submarines are in effect outlaws, when used as the German submarines have been used against merchant shipping, it is impossible to defend ships against their attacks as the law of nations has assumed that merchantmen would defend themselves against privateers or cruisers, visible craft giving chase upon the open sea. It is common prudence in such circumstances, grim necessity indeed, to endeavor to destroy them before they have shown their own intention. They must be dealt with upon sight, if dealt with at all.

"The German Government denies the right of neutrals to use arms at all within the areas of the sea which it has proscribed, even in the defence of rights which no modern publicist has ever before questioned their right to defend. The intimation is conveyed that the armed guards which we have placed on our merchant ships will be treated as beyond the pale of law and subject to be dealt with as pirates would be. Armed neutrality is ineffectual enough at best; in such circumstances and in the face of such pretentions it is worse than ineffectual; it is likely only to produce what it was meant to prevent; it is practically certain to draw us into the war without either the rights or the effectiveness of belligerents. There is one choice we cannot make, we are incapable of making; we will not choose the path of submission and suffer the most sacred rights of our nation and our people to be ignored or violated. The wrongs against which we now array ourselves are no common wrongs; they cut to the very roots of human life.

"With a profound sense of the solemn and even tragical character of the step I am taking and of the grave responsibilities which it involves, but in unhesitating obedience to what I deem my constitutional duty, I advise that the Congress declare the recent course of the Imperial German Government to be in fact nothing less than war against the government and people of the United States; that it formally accept the status of belligerent which has thus been thrust upon it; and that it take immediate steps not only to put the country in a more thorough state of defence, but also to exert all its power and employ all its resources to bring the government of the German Empire to terms and end the war.

"What this will involve is clear. It will involve the utmost practicable co-operation in counsel and action with the governments now at war with Germany, and, as incident to that, the extension to those governments of the most liberal financial credits, in order that our resources may so far as possible be added to theirs.

"It will involve the organization and mobilization of all the material resources of the country to supply the materials of war and serve the incidental needs of the nation in the most abundant and yet the most economical and efficient way possible.

"It will involve the immediate full equipment of the navy in all respects, but particularly in supplying it with the best means of dealing with the enemy's submarines.

"It will involve the immediate addition to the armed forces of the United States, already provided for by law in case of war, of at least 500,000 men, who should, in my opinion, be chosen upon the principle of universal liability to service, and also the authorization of subsequent additional increments of equal force so soon as they may be needed and can be handled in training.

"It will involve also, of course, the granting of adequate credits to the government, sustained, I hope, so far as they can equitably be sustained by the present generation, by well conceived taxation.

"I say sustained so far as may be equitable by taxation, because it seems to me that it would be most unwise to base the credits, which will now be necessary, entirely on money borrowed. It is our duty, I most respectfully urge, to protect our people, so far as we may, against the very serious hardships and evils which would be likely to arise out of the inflation which would be produced by vast loans.

"In carrying out the measures by which these things are to be accomplished we should keep constantly in mind the wisdom of interfering as little as possible in our own preparation and in the equipment of our own military forces with the duty—for it will be a very practical duty—of supplying the nations already at war with Germany with the materials which they can obtain only from us or by our assistance. They are in the field and we should help them in every way to be effective there.

"I shall take the liberty of suggesting through the several executive departments of the government, for the consideration of your committees, measures for the accomplishment of the several objects I have mentioned. I hope that it will be your pleasure to deal with them as having been framed after very careful thought by the branch of the government upon whom the responsibility of conducting the war and safeguarding the nation will most directly fall.

"While we do these things, these deeply momentous things, let us be very clear, and make very clear to all the world, what our motives and our objects are. My own thought has not been driven from its habitual and normal course by the unhappy events of the last two months, and I do not believe that the thought of the nation had been altered or clouded by them. I have exactly the same things in mind now that I had in mind when I addressed the Senate on the 22d of January last; the same that I had in mind when I addressed the Congress on the 3d of February and on the 26th of February. Our object now, as then, is to vindicate the principles of peace and justice in the life of the world as against selfish and autocratic power, and to set up among the really free and self-governed peoples of the world such a concert of purpose and of action as will henceforth insure the observance of those principles.

"Neutrality is no longer feasible or desirable where the peace of the world is involved and the freedom of its peoples, and the menace to that peace and freedom lies in the existence of autocratic governments, backed by organized force which is controlled wholly by their will, not by the will of their people. We have seen the last of neutrality in such circumstances. We are at the beginning of an age in which it will be insisted that the same standards of conduct and of responsibility for wrong done shall be observed among nations and their governments that are observed among the individual citizens of civilized states.

"We have no quarrel with the German people. We have no feeling toward them but one of sympathy and friendship. It was not upon their

impulse that their government acted in entering this war. It was not with their previous knowledge or approval. It was a war determined upon as wars used to be determined upon in the old, unhappy days, when peoples were nowhere consulted by their rulers and wars were provoked and waged in the interest of dynasties or of little groups of ambitious men who were accustomed to use their fellow men as pawns and tools.

"*Self-governed nations do not fill their neighbor states with spies or set the course of intrigue to bring about some critical posture of affairs which will give them an opportunity to strike and make conquest. Such designs can be successfully worked out only under cover and where no one has the right to ask questions. Cunningly contrived plans of deception or aggression, carried, it may be, from generation to generation, can be worked out and kept from the light only within the privacy of courts or behind the carefully guarded confidences of a narrow and privileged class. They are happily impossible where public opinion commands and insists upon full information concerning all the nation's affairs.*

"*A steadfast concert for peace can never be maintained except by a partnership of democratic nations. No autocratic government could be trusted to keep faith within it or observe its covenants. It must be a league of honor, a partnership of opinion. Intrigue would eat its vitals away; the plottings of inner circles who could plan what they would and render account to no one would be a corruption seated at its very heart. Only free peoples can hold their purpose and their honor steady to a common end and prefer the interests of mankind to any narrow interest of their own.*

"Does not every American feel that assurance has been added to our hope for the future peace of the world by the wonderful and heartening things that have been happening within the last few weeks in Russia? Russia was known by those who knew it best to have been always in fact democratic at heart in all the vital habits of her thought, in all the intimate relationships of her people that spoke their natural instinct, their habitual attitude toward life. The autocracy that crowned the summit of her political structure, long as it had stood and terrible as was the reality of its power, was not in fact Russian in origin, character, or purpose; and now it has been shaken off and the great, generous Russian people have been added, in all their naïve majesty and might, to the forces that are fighting for freedom in the world, for justice, and for peace. Here is a fit partner for a League of Honor.

"One of the things that has served to convince us that the Prussian autocracy was not and could never be our friend is that from the very outset of the present war it has filled our unsuspecting communities, and even our offices of government, with spies and set criminal intrigues everywhere afoot against our national unity of counsel, our peace within and without, our industries and our commerce. Indeed, it is now evident that its spies were here even before the war began; and it is unhappily not a matter of conjecture, but a fact proved in our courts of justice, that the intrigues, which have more than once come perilously near to disturbing the peace and dislocating the industries of the country, have been carried on at the instigation, with the support, and even under the personal direction of official agents of the Imperial Government, accredited to the government of the United States.

"Even in checking these things and trying to extirpate them we have sought to put the most generous interpretation possible upon them because we knew that their source lay, not in any hostile feeling or purpose of the German people toward us (who were, no doubt, as ignorant of them as we ourselves were), but only in the selfish designs of a government that did what it pleased and told its people nothing. But they have played their part in serving to convince us at last that that government entertains no real friendship for us, and means to act against our peace and security at its convenience. That it means to stir up enemies against us at our very doors the intercepted note to the German Minister at Mexico City is eloquent evidence.

"We are accepting this challenge of hostile purpose because we know that in such a government, following such methods, we can never have a friend; and that in the presence of its organized power, always lying in wait to accomplish we know not what purpose, can be no assured security for the democratic governments of the world. We are now about to accept the gauge of battle with this natural foe to liberty and shall, if necessary, spend the whole force of the nation to check and nullify its pretensions and its power. We are glad, now that we see the facts with no veil of false pretense about them, to fight thus for the ultimate peace of the world and for the liberation of its peoples, the German peoples included; for the rights of nations, great and small, and the privilege of men everywhere to choose their way of life and of obedience.

"The world must be made safe for democracy. Its peace must be planted upon the tested foundations of political liberty. We have no selfish ends to serve. We desire no conquest, no dominion. We seek no indemnities for ourselves, no material compensation for the sacrifices we shall freely make. We are but one of the champions of the rights of mankind. We shall be satisfied when those rights have been made as secure as the faith and the freedom of nations can make them.

"Just because we fight without rancor and without selfish object, seeking nothing for ourselves but what we shall wish to share with all free peoples, we shall, I feel confident, conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and of fair play we profess to be fighting for.

"I have said nothing of the governments allied with the Imperial Government of Germany because they have not made war upon us or challenged us to defend our right and our honor. The Austro-Hungarian Government has, indeed, avowed its unqualified indorsement and acceptance of the reckless and lawless submarine warfare, adopted now without disguise by the Imperial German Government, and it has therefore not been possible for this government to receive Count Tarnowski, the ambassador recently accredited to this government by the Imperial and Royal Government of Austria-Hungary; but that government has not actually engaged in warfare against citizens of the United States on the seas, and I take the liberty, for the present at least, of postponing a discussion of our relations with the authorities at Vienna. We enter this war only where we are clearly forced into it because there are no other means of defending our right.

"It will be all the easier for us to conduct ourselves as belligerents in a high spirit of right and fairness because we act without animus, not with enmity toward a people or with the desire to bring any injury or disadvantage upon them, but only in armed opposition to an irresponsible government which has thrown aside all considerations of humanity and of right and is running amuck.

"We are, let me say again, the sincere friends of the German people, and shall desire nothing so much as the early re-establishment of intimate relations of mutual advantage between us, however hard it may be for them for the time being to believe that this is spoken from our hearts. We have borne with their present government through all these bitter months because of that friendship, exercising a patience and forbearance which would otherwise have been impossible.

"We shall happily still have an opportunity to prove that friendship in our daily attitude and actions toward the millions of men and women of German birth and native sympathy who live among us and share our life, and we shall be proud to prove it toward all who are in fact loyal to their neighbors and to the government in the hour of test. They are most of them as true and loyal Americans as if they had never known any other fealty or allegiance. They will be prompt to stand with us in rebuking and restraining the few who may be of a different mind and purpose. If there should be disloyalty, it will be dealt with with a firm hand of stern repression; but, if it lifts its head at all, it will lift it only here and there and without countenance except from a lawless and malignant few.

"It is a distressing and oppressive duty, gentlemen of the Congress, which I have performed in thus addressing you. There are, it may be, many months of fiery trial and sacrifice ahead of us. It is a fearful thing to lead this great, peaceful people into war, into the most terrible and disastrous of all wars, civilization itself seeming to be in the balance.

"But the right is more precious than peace, and we shall fight for the things which we have always carried nearest our hearts—for democracy, for the right of those who submit to authority to have a voice in their own governments, for the rights and liberties of small nations, for a universal dominion of right by such a concert of free peoples as shall bring peace and safety to all nations and make the world itself at last free.

"To such a task we can dedicate our lives and our fortunes, everything that we are and everything that we have with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured.

"God helping her, she can do no other."

Congress Passes War Resolution.—On April 4 the Senate by a vote of 82 to 6, and on April 6 the House by a vote of 373 to 50, adopted the following declaration of a state of war between the United States and Germany:

"*Whereas,* The Imperial German Government has committed repeated acts of war against the government and the people of the United States of America; therefore, be it

"*Resolved,* by the Senate and House of Representatives of the United States of America in Congress assembled, That the the state of war between the United States and the Imperial German Government, which has thus been thrust upon the United States, is hereby formally declared; and

"That the President be, and he is hereby, authorized and directed to employ the entire naval and military forces of the United States and the resources of the government to carry on war against the Imperial German Government; and to bring the conflict to a successful termination all the resources of the country are hereby pledged by the Congress of the United States."

Proclamation of War.—At 1.18 p. m. on April 6 the President signed the resolution declaring a state of war with Germany, and on the same date issued a proclamation of war. According to the proclamation, citizens or subjects of Germany within the United States "shall be undisturbed in the peaceful pursuit of their lives and occupations," provided they surrender all arms and instruments of warfare, avoid prohibited areas, forts, navy yards, etc., refrain from seditious utterances, and observe in general the strict regulations applying to enemy aliens in time of war.

An Appeal to the People.—On April 15, the President issued, throughout the press of the country, an urgent appeal for energy in every pursuit that will contribute directly or indirectly to the prosecution of the war, and for the strictest economy in husbanding the country's resources. The appeal was directed particularly to shipbuilders, industrial workers, farmers, middlemen, miners, and railroad workers. "The industrial forces of the country, men and women alike, will be a great national, a great international service army—a notable and honored host engaged in the service of the nation and the world, the efficient friends and saviors of free men everywhere. Thousands, nay, hundreds of thousands, of men otherwise liable to military service will of right and of necessity be excused from that service and assigned to the fundamental, sustaining work of the fields and factories and mines, and they will be as much part of the great patriotic forces of the nation as the men under fire."

WARNING AGAINST TREASON.—The President's proclamation against treason, issued April 16, read as follows:

Whereas, All persons in the United States, citizens as well as aliens, should be informed of the penalties which they will incur for any failure to bear true allegiance to the United States;

Now, therefore, I, Woodrow Wilson, President of the United States, hereby issue this proclamation to call especial attention to the following provisions of the Constitution and the laws of the United States:

Section 3 of Article III, of the Constitution provides, in part:

Treason against the United States shall consist only in levying war against them, or in adhering to their enemies, giving them aid and comfort. The Criminal Code of the United States provides:

Section 1.—Whoever, owing allegiance to the United States, levies war against them or adheres to their enemies, giving them aid and comfort within the United States or elsewhere, is guilty of treason.

Sec. 2.—Whoever is convicted of treason shall suffer death; or, at the discretion of the court, shall be imprisoned not less than five years and fined not less than $10,000, to be levied on and collected out of any or all of his property, real and personal, of which he was the owner at the time of committing such treason, any sale or conveyance to the contrary notwithstanding; and every person so convicted of treason shall, however, be incapable of holding any office under the United States.

Sec. 3.—Whoever, owing allegiance to the United States and having knowledge of the commission of any treason against them, conceals and does not, as soon as may be, disclose and make known the same to the President or to some judge or justice of a particular state, is guilty of misprision of treason and shall be imprisoned not more than seven years and fined not more than $1000.

Sec. 6.—If two or more persons in any state or territory or in any place subject to the jurisdiction of the United States, conspire to overthrow, put down, or to destroy by force the government of the United States, or to levy war against them, or to oppose by force the authority thereof, or by force to prevent, hinder, or delay the execution of any law of the United States, or by force to seize, take, or possess any property of the United States, contrary to the authority thereof, they shall each be fined not more than $5000 or imprisoned not more than six years, or both.

The courts of the United States have stated the following acts to be treasonable:

The use or attempted use of any force or violence against the government of the United States, or its military or naval forces.

The acquisition, use, or disposal of any property with knowledge that it is to be, or with intent that it shall be, of assistance to the enemy in their hostilities against the United States.

The performance of any act or the publication of statements or information which will give or supply in any way aid and comfort to the enemies of the United States.

The direction, aiding, counseling, or countenancing of any of the foregoing acts.

Such acts are held to be treasonable, whether committed within the United States or elsewhere; whether committed by a citizen of the United

States or by an alien domiciled, or residing, in the United States, inasmuch as resident aliens, as well as citizens, owe allegiance to the United States and its laws.

Any such citizen or alien who has knowledge of the commission of such acts and conceals and does not make known the facts to the officials named in Section 3 of the Penal Code is guilty of misprision of treason.

And I hereby proclaim and warn all citizens of the United States and all aliens, owing allegiance to the government of the United States, to abstain from committing any and all acts which would constitute a violation of any of the laws herein set forth; and I further proclaim and warn all persons who may commit such acts that they will be vigorously prosecuted therefor.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington, this sixteenth day of April, in the year of our Lord one thousand nine hundred and seventeen, and of the independence of the United States of America the one hundred and forty-first.

WOODROW WILSON,
By the President:
ROBERT LANSING, Secretary of State.

SEVEN BILLION DOLLARS FOR WAR.—An April 15, the House of Representatives, by a unanimous vote, passed a bill to raise seven billion dollars to carry on the war. The bill authorized $5,000,000,000 in bonds, of which $3,000,000,000 will be loaned to Entente countries, and the issuance of treasury certificates for $2,000,000,000 to be ultimately met by increased taxation. The Senate passed the bill unanimously on April 17.

SUBMARINE ATTACKS.—In the period immediately preceding the declaration of war, a number of American vessels were torpedoed. The *City of Memphis* (5252 tons), Cardiff to New York in ballast, was sunk off Ireland, March 17, without loss of life; the *Vigilancia* (4115 tons), New York to Havre, was torpedoed in the Channel on the same date, with the loss of 15 of the crew; the tanker *Illinois* (5220 tons), London to Texas in ballast, was sunk on March 18, without loss; the tanker *Healdon* (4480) tons), Philadelphia to Rotterdam, was torpedoed on the night of March 21, off Terschelling, with loss of 21 men including seven Americans. The first armed American merchantman sunk was the steamer *Aztec,* torpedoed at 8.15 p. m. on April 1, off Ouessant, with 11 men drowned.

BREAK WITH AUSTRIA.—On April 8, Count Czernin, Austrian Foreign Minister, handed American Chargé d'Affaires Grew his passports, with the following note:

"Since the United States of America has declared a state of war exists between it and the Imperial German Government, Austria-Hungary, as allies of the German Empire, have decided to break off the diplomatic relations with the United States, and the Imperial and Royal Embassy at Washington has been instructed to inform the Department of State to that effect." (Here follows reference to inclosure.)

Immediately upon notification of the severance of relations, the United States government took possession of the 14 Austrian vessels in American ports, with a total tonnage of 67,807 gross. In view of Austria's concurrence in Germany's submarine policy, Count Tarnowski, the newly appointed Austrian Ambassador to this country, had not been received.

CUBA AND PANAMA DECLARE WAR.—On April 7, upon a message from President Menocal urgently counseling such action, the Cuban House and Senate unanimously approved a declaration of a state of war with Germany. German and Austrian ships in Cuban ports were at once seized.

On the same date the President of Panama issued a proclamation committing the Republic to "co-operate with all its energies and all its available resources" in the defence measures of the United States. Costa Rica offered her ports and territorial waters for war needs of the American Navy.

ATTITUDE OF SOUTH AMERICA.—On April 10, Brazil severed diplomatic relations with Germany; on April 13, she authorized the arming of Brazilian merchant vessels; and on April 15 she seized German and Austrian ships in Brazilian ports. The Brazilian consul at Cherbourg, was instructed to investigate the destruction of the Brazilian steamship *Parana,* reported sunk on April 8. Bolivia's severance of diplomatic relations with Germany was announced on April 14. Argentina, Chili, Peru, and Mexico announced continued neutrality. Argentina, however, as well as Uruguay and Paraguay, endorsed the policy of the United States.

RUMORS OF PEACE MOVES.—In an interview with a German press correspondent on March 31, Count Czernin, Austro-Hungarian Foreign Minister, announced that the peace offers of the Central Powers were still open. He denied Austria's desire for territorial acquisitions, and suggested a conference without cessation of hostilities. Rumors of a new peace offer, to be made by Emperor Charles, arose from the meeting of rulers and statesmen of the Central Powers in the last week of March. These, however, were officially denied by Germany, according to despatches of April 5.

Efforts of Germany to secure peace with Russia by communication between Russian and German Socialist leaders were seen in the announcement (April 9) that Philip Scheidemann, head of the majority Socialists in the Reichstag, had left Germany on "a mission"; and in the unhindered passage (April 14) of Russian radicals through Germany from Switzerland to Petrograd via Stockholm.

Connected with these rumors, as indicative of unrest in Germany, was the Kaiser's order to Chancellor von Bethmann Holweg, holding out the promise of electoral reforms in Prussia after the conclusion of hostilities (despatches of April 8).

RUSSIA.—The United States on March 22 was the first nation to recognize formally the new government in Russia. A Russian official proclamation extending to the Polish people their choice of a form of government, and assuming that this would be an independent state, was issued March 30. All laws restricting freedom of creeds and religion have been repealed.

On April 16, the "Congress of the Council of Workmen's and Soldiers' Delegates" in Russia adopted a set of resolutions containing the following points: (1) That the provisional government had thus far carried out its promises of reform; (2) that influence should be exercised over the provisional government to "insure its democratizing the whole Russian life and paving the way for a common peace without annexation or indemnity, but on a basis of free national development of all the peoples"; (3) that the provisional government should be supported, "so long as it continues to consolidate and develop the conquest of the revolution and as long as the basis of its foreign policy does not rest upon aspirations for territorial expansion."

Formal Transfer of Danish West Indies.—Formal transfer of the Danish West Indies to the flag of the United States took place on March 31, when Mr. Lansing handed to the Danish Minister a United States treasury warrant for $25,000,000.—*N. Y. Nation,* 4/5.

REVIEW OF BOOKS

ON

SUBJECTS OF PROFESSIONAL INTEREST

"England in the Mediterranean: A Study of the Rise and Influence of British Power Within the Straits: 1603-1713." By Julian S. Corbett. In two volumes. $5.00 net. (Longmans, Green and Co., 1917.)

First of all, it should be understood that "the substance of the present work," to quote Professor Corbett, was "given—partly in lectures before the senior and the flag officers' war courses at Greenwich, and partly in the Ford lectures on English history for 1903 at Oxford. It is now presented in a complete form on the not inappropriate occasion of the tercentenary of the capture of Gibraltar."

Mr. Corbett is too modest when he says the book is "not inappropriate," for it is due him to point out that his new volumes contribute much to our knowledge of the significance of the 17th century in naval history and naval policy—the gradually formulated policy of England, which, under the inspiration of William III and Marlborough, culminated in two vastly important terms of the Treaty of Utrecht, terms which sanctioned the grip of England on Gibraltar and Minorca.

"England in the Mediterranean," then, is distinctively a book for the enthusiast in naval history, and, besides, for the scholar who demands the thoroughness and the analysis, the breadth of view, and the actual contribution to knowledge characteristic of modern historical research. It presupposes in the reader a keen and unwavering interest in the subject. Its style, though human enough, and in accord with the "Oxford manner," leans somewhat toward heaviness—a heaviness due not to phrases, but to long sentences seldom broken by shorter ones, and to lack of sufficient variety in sentence structure. If the prospective reader discounts these considerations in advance, he will find an excellent, if not a classic, treatment of an important period which has been too long neglected.

The reason for this neglect is not far to seek. One is apt to forget that the naval history of the 17th Century has suffered by contrast with the periods preceding and following it. It is less dramatic, less heroic than the spacious Elizabethan days of Drake and Hawkins, or the imperial era of Rodney and Nelson; it has been treated, apparently, as a belt of "doldrums" between the gales that carried the Armada to destruction and the winds that filled the sails of the British at Trafalgar.

Moreover, the 17th Century itself, as a period of naval history and policy, has suffered, as regards its perspective, from the tendency to subordinate the quiet decisions of history to the dramatic decisions, or even the flourishes. In other words, we know more about the Dutch wars and the colonial enterprises of England in this hundred years or more than we know of the central and all-decisive Mediterranean aspect. On this account, Mr. Corbett wisely limits his field to the determining issue of sea power "within the Straits," and tells the story of that long series of moves by diplomatists and sea captains, that epic of attempts, frequent failures, interruptions, but doggedly persistent efforts of England to obtain a foothold in the historic middle seas. These efforts, not only thwarted by enemies, but often spoiled or abandoned through lack of insight, or swept aside by other considerations in an emergency, were never finally abandoned, and reached their first decisive goal in 1713 with the capture of Gibraltar, and, in those days, the equally important base, Minorca. The Treaty of Utrecht, signed in that year, gave England a leverage in the Straits which boded ill for the future sea power of the Dutch, the French, and the Spanish. It symbolized the great outstanding fact of the 17th Century—that the dream of the Roman Empire, the control by united Southern Europe of the Mediterranean, could never be revived; it symbolized also the future of Great Britain as the predominant power on the seas.

To this indication of the purpose of the book should be added a few of the more notable features. There is the very beginning of England's Mediterranean activity, the work of Ward among the Barbary pirates. "Timorously James I had sown the seed without knowledge of its nature, and scarcely aware that he had let it fall." Then there is the policy of Cromwell, who, "by an instinct almost as blind, had tilled the pregnant soil," and that of Charles II—"a true sea king," who "brought the fruit to his lips" by taking Tangier. But "it was not till William III brought with him for British statesmen a real feeling for continental politics that the truth took visible shape." "It was not his hand that achieved" the capture of Gibraltar, but that of Marlborough, who pulled the strings throughout Europe which set in motion and carried to victory the sea power of England, and first took, then held, the Straits. "When we think of all its wide results, when we see how far it went to fix the European system on its still existing lines, it seems too brilliant a jewel to add to Marlborough's crown. We shrink from believing that one human mind can have wrought so much. Yet the truth is no less."

H. C. WASHBURN.

"The Freedom of the Seas (Mare Liberum) or the Right which belongs to the Dutch to take part in the East Indian Trade; a dissertation by Hugo Grotius." (New York: Oxford University Press.)

This timely edition is translated from the Latin by Professor Magoffin, of Johns Hopkins, and edited with an introductory note by James Brown Scott, Director of the Carnegie Endowment for International Peace.

In 1604 the freedom of the seas was not recognized. The Adriatic, Ligurian, North, and Baltic came under the claims and domination, if not the dominion, of Venice, Genoa, England, and Sweden. Since 1493 the three great oceans had been divided by the Pope between Spain and Portugal.

But in the Peace of Westphalia the rulers of Europe did recognize this and other principles of the Law of Nations, a law recognized to be superior to the desires or necessities of any one nation. By this time the degradations of the Thirty Years' War had proved the necessity of such a law and the unreason of Machiavelli's theories of the state. During these four decades, however, there had been another strong influence over the thought of Europe, the learning and logic of Grotius. His Law of War and Peace, it is interesting to note, accompanied Gustavus Adolphus in his campaigns. In 1817 Great Britain, then undisputed "Mistress of the Seas," expressly gave up claim to jurisdiction beyond a league from her shores, citing and affirming principles first stated and made current by the young Dutch scholar in 1608. He may therefore well be termed the father of the science of international law.

In Mare Liberum Grotius examines the Portuguese claim to a monopoly of the East Indian trade under thirteen heads. Chapters I, V, and VII are of special interest. In Chapter I he states as axiomatic by the law of nations that navigation is free to all persons whatsoever. Since, by the decree of divine justice, one people must supply the needs of another, he says, every nation is free to travel to every other nation and to trade with it. In Chapter V, treating the Portuguese claim to exclusive jurisdiction over the Indian Ocean and its navigation, he traces the origin of sovereignty, or ownership, through use and occupation. He draws two conclusions: "The first is, that that which cannot be occupied, or which never has been occupied, cannot be the property of any one, because all property (ownership) has arisen from occupation. The second is, that all that which has been so constituted by nature that, although serving some one person, it still suffices for the common use of all other persons, is to-day and ought in perpetuity to remain in the same condition as when it was first created by nature." By nature, his argument continues, the sea is not susceptible of occupation, and furthermore is destined for the common use of all men. Even in the Spanish laws its open and common use is clearly expressed. Ownership, or sovereignty, of the sea has always meant the right to use in common with all men, and has never meant an exclusive or privative right. In the case of the sea, moreover, according to Chapter VII title by prescription or custom is not possible, since all the conditions necessary to such title are absent. For actual possession by one nation has never continued from time immemorial or indeed for any considerable period; nor has the right of possession by any one nation ever been recognized as a matter of common knowledge on the part of those concerned. And, finally, no nation has ever been able to keep all others from using the high seas, or from the right to use them.

After the lapse of three centuries this statement of the principle would still pass current. Compare Stockton's statement of it written in 1914: "The high seas are free and cannot be denied to the use of all nations at all times. This rule is based largely upon the necessity of absolute freedom of intercourse by means of the sea, as the sea is becoming more and more an international highway and less and less an obstacle for international communication. Besides these grounds, there is the traditional one also that it is practically impossible to retain possession of the high seas by permanent occupation, in the sense that territory on land is so occupied."

Grotius wrote Mare Liberum in the winter of 1604-5 as part of a lawyer's brief, when he was only 21. An argument so potent and so inspired is worth reading by every student of law and history. And every student, it must be added, would enjoy reading it in this, its first publication in English; the format is attractive, the introduction stimulating, the translation remarkably free from pedantry and, except for a few places, from obscurities. We should, however, like to see better translations of the following: proprio, p. 23; videri, p. 23; penes neminem, p. 24; autem, p. 25; lines six and seven, p. 25; applicatione, p. 25; suis, p. 34; diserte, p. 44.

C. H. F.

"The Adventures of the *U-202*." By Baron Spiegel von und zu Peckelsheim, Captain-Lieutenant, commander of the *U-202*. 201 pages. $1.00 net. (New York: The Century Company.)

One of the popular stories written for home (German) consumption with the idea of keeping the various branches of the military and naval service ever in the public eye. Translated into English it is quite apt to prove a boomerang, for nothing makes the reports of the various commissions on atrocities in Belgium more understandable than does this author's thinly veiled gloating over the torpedoing and sinking of a laden horse transport. The book is a collection of submarine adventures based on fact; it is particularly valuable for the viewpoint which it discloses, especially when we recall that it must have been published with authority.

"Preliminary Mathematics." By Professor F. E. Austin, B. S., E. E. Hanover, N. H. 169 pages. $1.25 post paid.

The author's remarks in the preface best explain the aim of this work. "For many generations algebra has followed arithmetic in educational and scientific courses, and the change from a study of numbers to a system of reasoning solely conducted by symbols and letters, gives the average student such an educational jolt as to induce discouragement, and largely contributes to the cessation of school education at or before high school stage."

The book, intended to be used as an auxiliary in conjunction with other text-books, is especially designed to carry pupils from the lower grades into high school work. It is believed that this work will prove of value to divisional officers and others interested in the conduct of mathematical courses in service classes.

NAVAL ACADEMY GRADUATES' ASSOCIATION

At a meeting of the council of the Association held on March 27, the following action was taken:

> "In view of the general situation the Council has decided to indefinitely postpone the 1917 annual meeting and dinner."

The council feel assured that the members of the Association will approve this decision.

As a new council cannot be elected except at an annual meeting, the present members of the council will continue to act, filling such vacancies as may occur in its membership as authorized by the constitution of the Association.

The class of 1917, 180 members, was graduated on March 29. The second class took up the first class year's work on that date, and will be graduated in September, 1917.

The design for the Farragut window has been approved by the Fine Arts Commission, and the actual making of the window is now in progress. It is understood from last reports that the window will be ready to install sometime during the late summer or fall.

The Corbesier tablet has been completed and is now at the academy, ready to be put up as soon as a suitable location has been chosen. The cost of this tablet was $465.00, and up to the present the subscriptions have amounted to $137.00, leaving a deficit of $328.00 to be paid by the one graduate who had guaranteed the subscription. Any graduate who has not already subscribed and who may care to do so, may forward his subscriptions to the secretary-treasurer of the Association. The original appeal asked for subscriptions of not over one dollar from each graduate.

The council has authorized your secretary to bring to your attention a matter which may prove of interest to a number of the graduates of the academy. At the time of the rebuilding of the academy it was found necessary to establish a hospital in Annapolis to care for such emergency cases as might need hospital attention without the necessity of having the cases taken to hospitals in other cities.

From a small beginning the Emergency hospital has grown until now it has been found necessary to again enlarge the building. Though small, the present hospital has the reputation of being one of the most complete and up to date in the state of Maryland.

As the government hospital is of course closed to women, the Emergency is the one hospital in Annapolis where the women members of the families of officers attached to the academy can receive proper hospital attention in Annapolis.

The funds for the necessary enlargement of this hospital will be raised by gifts and donations, and the secretary of the Association would be very glad to forward to the hospital authorities any sums which graduates interested may care to donate.

CHANGES IN REGISTER

217	Date	'47	Eggleston, John R. Res., Jan. 22, '61, Lt. Died, ———, Raymond, Miss.
266	"	'49	May, Robert L. Wholly ret., April 21, '66, Lt. Comdr. Died, Sept. 24, '16, Denver, Col.
319	Class	'56	Phythian, R. L. Ret., July 29, '97, Commo. Died, Jan. 20, '17, Annapolis, Md.
351	"	'58	Reed, Allen Victor. Ret., June 11, '96, Capt. R. Adml. (Ret.). Died, Jan. 14, '17, Washington, D. C.
355	"	'58	Dewey, George. Died, Jan. 16, '17, Admiral of the Navy, Washington, D. C.
651	"	'65	Ide, George Elmore. Ret., Sept. 27, '01, R. Adml. Died, Feb. 12, '17, New York, N. Y.
675	"	'66	Hunker, John Jacob. Ret., June 12, '06, R. Adml. Died, Dec. 16, '16, Asheville, N. C.
744	"	'67	Merrell, John Porter. Ret., Sept. 7, '08, R. Adml. Died, Dec. 8, '16, New London, Conn.
750	"	'67	Jaques, William Henry. Res., Oct. 30, '87, Lt. Died, Nov. 23, '16, near London, Eng.
861	"	'68	McElroy, Horace. Res., Feb. 28, '70, Ens. Died, ———, Janesville, Wis.
878	"	'68	McMechan, Andrew Charles. Ret., Oct. 29, '83, Lt.; Lt. Comdr. (Ret.). Died, Sept. 9, '16, Hampton, Va.
1071	"	'71	Calkins, Carlos Gilman. Ret., June 30, '05, Capt. Died, Dec. 20, '16, Berkeley, Cal.
1293	"	'76	Mulligan, Richard Thomas. Ret., June 30, '10, Commo. Died, Feb. 24, '17, Elizabeth, N. J.
1397	"	'79	Miner, Randolph Huntington. * Res., Oct. 11, '95, Lt.
1425	"	'79	Cunningham, Andrew Chase. Died, Jan. 13, '17, Civil Engr., Washington, D. C.
1520	"	'80	Brinley, Edward. Res., Oct. 25, '83, Ens. (J. G.). Died, Jan. 9, '17, New York, N. Y.

1550	Class	'81	Capehart, Edward Everett. Ret., Dec. 7, '15, Capt. Died, Feb. 20, '17, Washington, D. C.
1606	"	'81	McKee, Llewelyn Thomas. † Hon. dis., June 30, '83, Nav. Cdt. Died, Feb. 13, '17, Philadelphia, Pa.
1725	"	'83	Brady, Cyrus Townsend. * Res., Sept. 1, '83, Nav. Cdt.
1978	"	'90	Holmes, Urban Tigner. Ret., Jan. 18, '17, Comdr.
1991	"	'90	Snow, William Alanson. Change U. S. S. *New York,* to U. S. S. *Charleston.*
3256	"	'08	Greeno, Loren Walden. Res., June 1, '11, Midn. Died, Nov. 18, '16, Cincinnati, Ohio.
3329	"	'08	Tipton, Thomas Murray. Dismissed, Jan. 3, '17, Lt. (J. G.).
3342	"	'09	Welsh, Luther. Killed by explosion, Nov. 8, '16, Lt. (J. G.), near Indian Head, Md.
3504	"	'09	Lange, Edward Charles. Dismissed, Jan. 9, '17, Lt. (J. G.).
3530	"	'10	Bronson, Clarence King. Killed by explosion, Nov. 8, '16, Lt. (J. G.), near Indian Head, Md.
3698	"	'11	Douglas, Harold Gordon. Res., Nov. 3, '11, Midn. Died, Dec. 28, '16, 1st Lt. Coast Art. U. S. Army, New Orleans, La.
3963	"	'12	Hawkins, Rodes Hatch. Dropped, Jan. 3, '17, Ens.
4087	"	'13	Dale, George Satterfield. Ret., Jan. 23, '17, Lt. (J. G.).
4276	"	'14	Angel, Charles Fitzhugh. Died. Feb. 26, '17, Ens., Zurich, Switzerland.
4384	"	'15	Alexander, William Dennison. Res., April 5, '16, Asst. Paymaster, 2d Lieut. Field Art., U. S. Army.
4460	"	'15	Dollarhide, E. S. Res., Oct. 9, '15, Midn., 2d Lieut. Field Art., U. S. Army.
4477	"	'16	Reed, Malcolm Willard. Res., Sept. 29, '16, Midn.
4578	"	'16	Alger, Montgomery Meigs. Res., Oct. 5, '16, Midn., Southgate Ave., Annapolis, Md.
4607	"	'16	Hamilton, Stuart Adams. Res., Sept. 27, '16, Midn.

NOTICE

The U. S. Naval Institute was established in 1873, having for its object the advancement of professional and scientific knowledge in the Navy. It is now in its forty-fourth year of existence, trusting as heretofore for its support to the officers and friends of the Navy. The members of the Board of Control cordially invite the co-operation and aid of their brother officers and others interested in the Navy, in furtherance of the aims of the Institute, by the contribution of papers and communications upon subjects of interest to the naval profession, as well as by personal support and influence.

On the subject of membership the Constitution reads as follows:

ARTICLE VII

Sec. 1. The Institute shall consist of regular, life, honorary and associate members.

Sec. 2. Officers of the Navy, Marine Corps, and all civil officers attached to the Naval Service, shall be entitled to become regular or life members, without ballot, on payment of dues or fees to the Secretary and Treasurer. Members who resign from the Navy subsequent to joining the Institute will be regarded as belonging to the class described in this Section.

Sec. 3. The Prize Essayist of each year shall be a life member without payment of fee.

Sec. 4. Honorary members shall be selected from distinguished Naval and Military Officers, and from eminent men of learning in civil life. The Secretary of the Navy shall be, *ex officio,* an honorary member. Their number shall not exceed thirty (30). Nominations for honorary members must be favorably reported by the Board of Control, and a vote equal to one-half the number of regular and life members, given by proxy or presence, shall be cast, a majority electing.

Sec. 5. Associate members shall be elected from Officers of the Army, Revenue Cutter Service, foreign officers of the Naval and Military professions, and from persons in civil life who may be interested in the purposes of the Institute.

Sec. 6. Those entitled to become associate members may be elected life members, provided that the number not officially connected with the Navy and Marine Corps shall not at any time exceed one hundred (100).

Sec. 7. Associate members and life members, other than those entitled to regular membership, shall be elected as follows: "Nominations shall be made in writing to the Secretary and Treasurer, with the name of the member making them, and such nominations shall be submitted to the Board of Control, and, if their report be favorable, the Secretary and Treasurer shall make known the result at the next meeting of the Institute, and a vote shall then be taken, a majority of votes cast by members present electing."

Sec. 8. The annual dues for regular and associate members shall be two dollars, all of which shall be for a year's subscription to the UNITED STATES NAVAL INSTITUTE PROCEEDINGS, payable upon joining the Institute, and upon the first day of each succeeding January. The fee for life membership shall be thirty dollars, but if any regular or associate member has paid his dues for the year in which he wishes to be transferred to life membership, or has paid his dues for any future year or years, the amount so paid shall be deducted from the fee for life membership.

ARTICLE X

Sec. 2. One copy of the PROCEEDINGS, when published, shall be furnished to each regular and associate member (in return for dues paid), to each life member (in return for life membership fee paid), to honorary members, to each corresponding society of the Institute, and to such libraries and periodicals as may be determined upon by the Board of Control.

The PROCEEDINGS are published monthly; subscription for non-members, $3.00; enlisted men, U. S. Navy, $2.00. Single copies, by purchase, 30 cents; issues preceding January, 1917, 50 cents.

All letters should be addressed U. S. Naval Institute, Annapolis, Md., and all checks, drafts, and money orders should be made payable to the same.

SPECIAL NOTICE

NAVAL INSTITUTE PRIZE ESSAY, 1918

A prize of two hundred dollars, with a gold medal, and a life-membership (unless the author is already a life member) in the Institute, is offered by the Naval Institute for the best essay presented on any subject pertaining to the naval profession.

On the opposite page are given suggested topics. Essays are not limited to these topics and no additional weight will be given an essay in awarding the prize because it is written on one of these suggested topics over one written on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. The award for the prize will be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay in a sealed envelope to the Secretary and Treasurer on or before January 1, 1918. The name of the writer shall not be given in this envelope, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary and Treasurer, with the motto on the outside and writer's name and motto inside. This envelope is not to be opened until after the decision of the Board.

3. The successful essay to be published in the PROCEEDINGS of the Institute; and the essays of other competitors, receiving honorable mention, to be published also, at the discretion of the Board of Control; and no change shall be made in the text of any competitive essay, published in the PROCEEDINGS of the Institute, after it leaves the hands of the Board.

4. If, in the opinion of the Board of Control, the best essay presented is not of sufficient merit to be awarded the prize, it may receive "Honorable Mention" or such other distinction as the Board may decide.

5. In case one or more essays receive "Honorable Mention," the writers thereof will receive a minimum prize of seventy-five dollars and a life-membership (unless the author is already a life member) in the Institute, the actual amounts of the awards to be decided by the Board of Control in each case.

6. An essay not having received honorable mention may be published also, at the discretion of the Board of Control, but only with the consent of the author.

7. The essay is limited to fifty (50) printed pages in the PROCEEDINGS of the Institute.

8. It is requested that all essays be submitted typewritten and in duplicate, if practicable; essays submitted written in longhand and in single copy will, however, receive equal consideration.

9. In the event of the prize being awarded to the winner of a previous year, a gold clasp, suitably engraved, will be given in lieu of the gold medal.

By direction of the Board of Control.

J. W. GREENSLADE,
Commander, U. S. N., Secretary and Treasurer

PRIZE ESSAY TOPICS

Suggested at the Invitation of the Board of Control

BY

THE PRESIDENT OF THE NAVAL INSTITUTE, THE SUPERINTENDENT OF THE NAVAL ACADEMY, THE PRESIDENT OF THE NAVAL WAR COLLEGE, AND THE COMMANDERS-IN-CHIEF OF THE ATLANTIC, PACIFIC AND ASIATIC FLEETS.

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"The Organization, Employment and Training of Reserve Fleets and Flotillas."

"A Personnel Reserve for the Naval Service."

"Value of Speed as an Offensive Element in Battleship Strategy and Tactics, as Compared with Armor."

LIST OF PRIZE ESSAYS

1879

Naval Education. Prize Essay, 1879. By Lieut. Comdr. A. D. Brown, U. S. N.

Naval Education. First Honorable Mention. By Lieut. Comdr. C. F. Goodrich, U. S. N.

Naval Education. Second Honorable Mention. By Commander A. T. Mahan, U. S. N.

1880

"The Naval Policy of the United States." Prize Essay, 1880. By Lieutenant Charles Belknap, U. S. N.

1881

The Type of (I) Armored Vessel, (II) Cruiser best suited to the Present Needs of the United States. Prize Essay, 1881. By Lieutenant E. W. Very, U. S. N.

Second Prize Essay, 1881. By Lieutenant Seaton Schroeder, U. S. N.

1882

Our Merchant Marine: The Causes of its Decline and the Means to be taken for its Revival. "Nil clarius aquis." Prize Essay, 1882. By Lieutenant J. D. Kelley, U. S. N.

"Mais il faut cultiver notre jardin." Honorable Mention. By Master C. G. Calkins, U. S. N.

"Spero meliora." Honorable Mention. By Lieut. Comdr. F. E. Chadwick, U. S. N.

"Causa latet: vis est notissima." Honorable Mention. By Lieutenant R. Wainwright, U. S. N.

1883

How may the Sphere of Usefulness of Naval Officers be extended in Time of Peace with Advantage to the Country and the Naval Service? "Pour encourager les Autres." Prize Essay, 1883. By Lieutenant Carlos G. Calkins, U. S. N.

"Semper paratus." First Honorable Mention. By Commander N. H. Farquhar, U. S. N.

"Culibet in arte sua credendum est." Second Honorable Mention By Captain A. P. Cooke, U. S. N.

1884

The Reconstruction and Increase of the Navy. Prize Essay, 1884. By Ensign W. I. Chambers, U. S. N.

1885

Inducements for Retaining Trained Seamen in the Navy, and Best System of Rewards for Long and Faithful Service. Prize Essay, 1885. By Commander N. H. Farquhar, U. S. N.

1886

What Changes in Organization and Drill are Necessary to Sail and Fight Effectively Our Warships of Latest Type? "Scire quod nescias." Prize Essay, 1886. By Lieutenant Carlos G. Calkins, U. S. N.

The Result of all Naval Administration and Efforts finds its Expression in Good Organization and Thorough Drill on Board of Suitable Ships. Honorable Mention. By Ensign W. L. Rodgers, U. S. N.

1887

The Naval Brigade: its Organization, Equipment and Tactics. "In hoc signo vinces." Prize Essay, 1887. By Lieutenant C. T. Hutchins.

1888

Torpedoes. Prize Essay, 1888. By Lieut. Comdr. W. W. Reisinger, U. S. N.

1891

The Enlistment, Training and Organization of Crews for our Ships of War. Prize Essay, 1891. By Ensign A. P. Niblack, U. S. N.

DISPOSITION AND EMPLOYMENT OF THE FLEET: SHIP AND SQUADRON DRILL. Honorable Mention, 1891. By Lieutenant R. C. Smith, U. S. N.

1892

Torpedo-boats: their Organization and Conduct. Prize Essay, 1892. By Wm. Laird Clowes.

1894

The U. S. S. Vesuvius, with Special Reference to her Pneumatic Battery. Prize Essay, 1894. By Lieut. Comdr. Seaton Schroeder, U. S. N.

NAVAL REFORM. Honorable Mention, 1894. By Passed Assistant Engineer F. M. Bennett, U. S. N.

1895

Tactical Problems in Naval Warfare. Prize Essay, 1895. By Lieut. Comdr. Richard Wainwright, U. S. N.

A SUMMARY OF THE SITUATION AND OUTLOOK IN EUROPE. An Introduction to the Study of Coming War. Honorable Mention, 1895. By Richmond Pearson Hobson, Assistant Naval Constructor, U. S. N.

SUGGESTIONS FOR INCREASING THE EFFICIENCY OF OUR NEW SHIPS. Honorable Mention, 1895. By Naval Constructor Wm. J. Baxter, U. S. N.

THE BATTLE OF THE YALU. Honorable Mention, 1895. By Ensign Frank Marble, U. S. N.

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The Tactics of Ships in the Line of Battle. Prize Essay, 1896. By Lieutenant A. P. Niblack, U. S. N.

THE ORGANIZATION, TRAINING AND DISCIPLINE OF THE NAVY PERSONNEL AS VIEWED FROM THE SHIP. Honorable Mention, 1896. By Lieutenant Wm. F. Fullam, U. S. N.

NAVAL APPRENTICES, INDUCEMENTS, ENLISTING AND TRAINING. The Seaman Branch of the Navy. Honorable Mention, 1896. By Ensign Ryland D. Tisdale, U. S. N.

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Torpedo-boat Policy. Prize Essay, 1897. By Lieutenant R. C. Smith, U. S. N.

A PROPOSED UNIFORM COURSE OF INSTRUCTION FOR THE NAVAL MILITIA. Honorable Mention, 1897. By H. G. Dohrman, Associate Member, U. S. N. I.

TORPEDOES IN EXERCISE AND BATTLE. Honorable Mention, 1897. By Lieutenant J. M. Ellicott, U. S. N.

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SYSTEMATIC TRAINING OF THE ENLISTED PERSONNEL OF THE NAVY. Honorable Mention, 1903. By Lieutenant C. L. Hussey, U. S. N.

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1914

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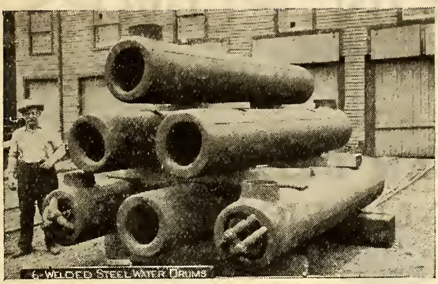

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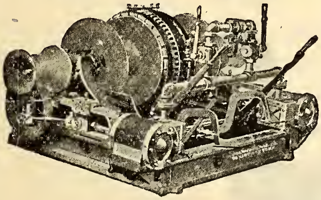

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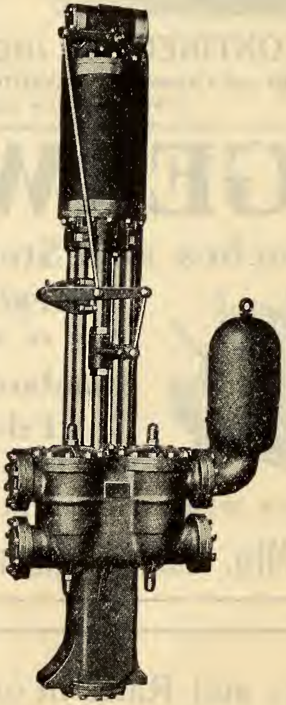

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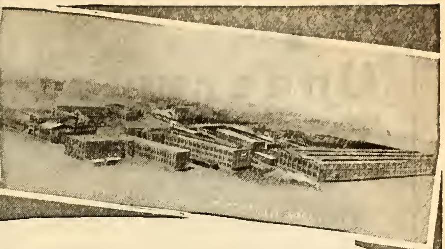

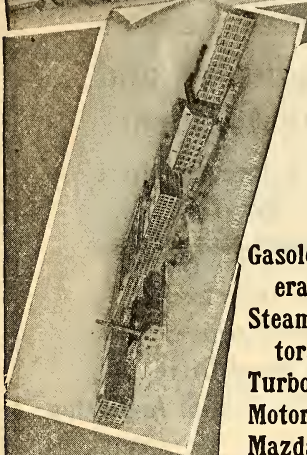

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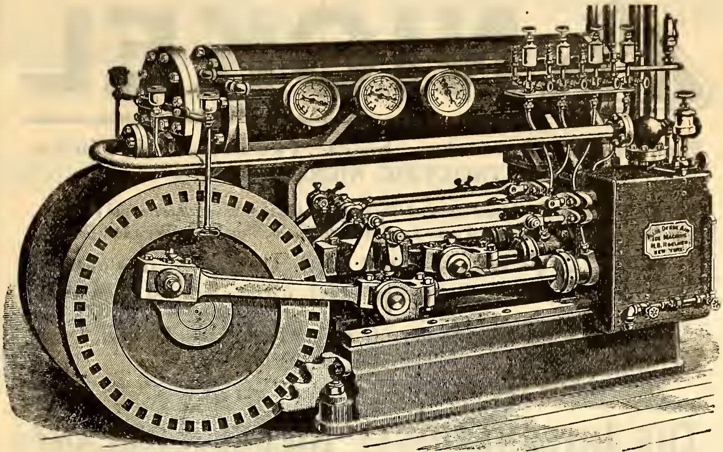

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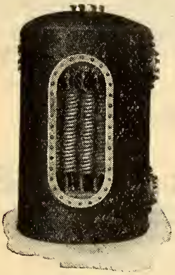

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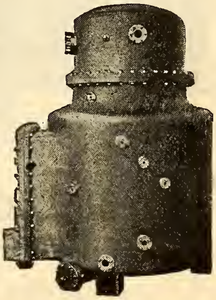

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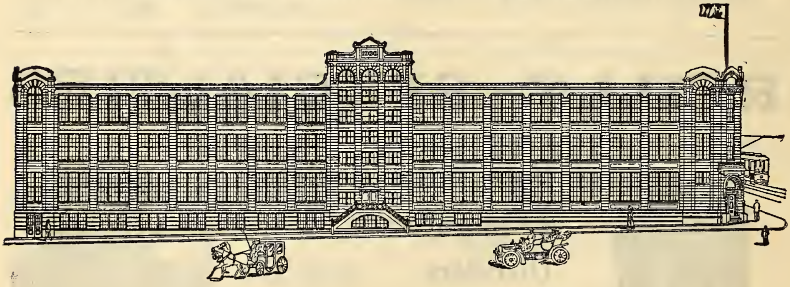

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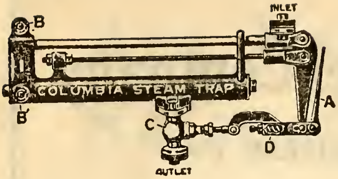

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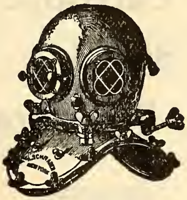

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